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Citrus By-Products Utilization

By Isabelle S. Thursby, at Florida State Horticultural Society Meeting at Bradenton

In the discussion of the topic that was suggested to me, I had thought to prepare a long thick paper on the subject of what has been accomplished in the research laboratories, and what is being done in the manufacturing plants, in California—of course, mainly—with citrus by-products. This was before I learned that Dr. Church was to be with us.

Most fortunately for you to have been spared my presentation and to have gotten it first hand from Dr. Church. Now I shall confine myself mostly to a few points on the utilization of those citrus products which are most interesting and most important, from a nutritional standpoint, to the woman in the home.

Although there is a wide demand for high grade, uniform citrus products and though the members of the citrus family in Florida, in their diversity of appearance, color, texture, flavor and quality, present a fascinating field—it is a situation not sufficiently appreciated as yet, by women with the ladle.

Magnificent opportunities exist for women in the state in establishing and developing self sustaining, original industries that could make Florida famous for her canned goods, preserves, marmalades, and quality crystallized products. True, some women and girls have already made splendid utilization of our citrus fruits, but even the surface of the industry has not been scratched. I repeat, we have a varied and wonderfully attractive group that combine into jellies, marmalades, spreads, crushes, juices, relishes, syrups, pre-

serves, spiced and crystallized products that are not only beautiful, but better yet — both toothsome and healthful—kumquat, limequat, orangequat, tangelo, pomelo, pink shaddock and many other interesting forms.

Products that are unsurpassed in flavor and of a marvelous color and transparency. I realize, of course, that it would only be in our big main crop of surplus round oranges and grapefruit that the citrus grower, right now, is concerned in utilizing, but I say again, these other members perhaps now in the novelty class, are of tremendous interest to our women and some day that interest will be taken into the commercial field—for at present, but few of these products are known to the consuming public.

The kumquat, the smallest member of the citrus family, is fairly well known, and because of its hardy characteristic, may be found growing also, over the northern section of Florida. Their dense, branching habit of growth, attractive dark green leaves and golden mellow fruit, make them objects of beauty in any shrubbery planting, and we recommend them to be used for that purpose. Kumquats enjoy the distinction of being the only citrus fruit that is eaten whole. As you know probably from personal experience the skin is spicy and aromatic, and the pulp delightfully acid. They make excellent preserves, marmalades, jellies, and are an ideal fruit for crystallizing when used at the right stage of growth. This is very

important for best flavor and good texture.

In the lime group, may be mentioned several varieties of much interest and value to the preserve maker. Of these, the limequats originated in the Citrus Experiment Station in Lake County, are, as the name indicates, a cross between the lime and the kumquat, with the color but none of the bitterness of the lime and all the piquant flavor of the kumquat. These limes work into delightfully "lemony" jellies, marmalades and preserves. If you were to work with the limequats, you would almost be inclined to think there was something mysterious or miraculous about their intensive jellying properties. These jellyed limequats, like sour orange preserves, are excellent to a degree that doesn't admit of any improvement—hardly—and will not until Mother Nature or Mr. Savage or Mr. Swingle produces a super-limequat.

But I don't believe they are thinking of any such probability and you will be quite satisfied to take the limequat as it is, and not ask for anything finer. For in jellyed limequats and sour orange preserves, we have just about reached the maximum of high-grade goodness. Only—I am sorry that Mr. Savage handed out the limequat—and the seeds—together—an oversight on his part, I am sure.

Another beautiful ornamental, also a member of the lime group, bearing a small tangerine-like acid fruit of fine quality, is the calamondin. It is very hardy too, very frost resistant.

Then there is the larger lime, the so called, Rangpur, well flavored and of a deep, orange color. These may all be used in the same way as lemons in the making of ades and for seasoning food. In fact, many think they are better than the lemon and more interesting, because of their high color.

But of all the lemons found in Florida, and they are many, the one that most delights the preserve-maker is the Ponderosa, a door yard planting usually and advertised by northern nurserymen for pot culture. They resemble a grapefruit in size and color, and the whole fruit, with its thick clean-cut, lemon flavored peel, will cook beautifully clear and translucent under the skillful hands of the women who strive for quality and characteristic flavor.

But while we reach out with one hand for these newer citrus relations we certainly hold on tightly with the other to the old and known favorites. For better far than all the newer generation together, is that member of the citrus family that was brought to Florida during the days of the early Spanish explorers, namely, the Seville, or sour orange. As you know, this fine Old World adventurer still furnishes the best root stock upon which to bud and graft; 75% of the world's output of citrus fruit being from trees of sour orange root stock. In addition to this, it is the only citrus fruit from which is manufactured the orange marmalade with such a "tang" and after-taste as to have made England and Scotland famous in every corner of the globe. If you will pardon a personal reference, may I say, I grew up in what was part of an unusually beautiful wild grove, yes one of the earliest recollections of the food of my childhood is that of the Dundee marmalade, served in my home in that orange grove on the St. Johns. And today, with sour oranges found growing very nearly all over the State, (we have them growing even in Tallahassee,) it is a sad pity that this delightful tonic, appetite and digestion-awakening marmalade is not served at breakfast in every Florida home. And it is a fact that it is—not.

As you probably know, the marmalade industry was first started in 1797 by a woman, Mrs. James Keiller, in the heart of Dundee, Scotland. This appetizing product immediately became a very popular table delicacy, and the demand was so stimulated, that Mrs. Keiller's husband went to London to superintend the selling of the product, which was then placed upon the market in that city. (This from the report of Consul

M. K. Moorhead of Dundee, Scotland.)

Interesting, this incident in the early history of citrus by-products. For people to have discovered and insisted, for nearly a century and a half that our sour orange marmalade may be both desirable and delicious.

And the patient citrus fanciers are not through yet!

Sour orange marmalade became so universally popular, back in the seventeenth century that it enlarged into an industry of great proportions. Today there are some hundreds of manufacturers. But the place of its origin, Dundee, is still regarded as the home and center of the industry. The production from the various factories is estimated to amount to three thousand tons annually, and a considerable proportion of this amount is exported to the United States and Canada, Canada being the largest consumer, even Florida promotes its use.

The product is put up in glass and in stone jars and also in tins. The largest factory in Dundee make their own tins in a modern tin shop, on their own premises, but most of the factory equipment is obtained from England and Germany. I am rather in favor of a greater use of tin. For, if people are going to have marmalades and "spreads", they should have none but the very best and they should have as much as they can get for their money. It is ridiculous to think that a high class marmalade cannot come out of a tin just the same as from a glass container. Glassware is so heavy that it costs more money to ship the glassware than the marmalade that is in it. When it gets to its destination people discover that they cannot eat glassware anyway, and it goes to the dump. That's why, instead of getting a twelve ounce jar of marmalade for 50c or 60c, you should get fourteen to twenty ounces in tin for much less. The only justification for charging more money would spring from the conviction that money is easy to get because the public is ready to turn it over to those who do know how to go after it.

May I repeat this; sour orange marmalade from Dundee is sent to every corner of the globe. Florida could furnish a similar product. Is not Florida asleep? And just when will she awaken to her opportunities and to the privilege of contributing products to the world's food supply that are not only delicious to the taste, but which, according to present day research—abound in substances that are indispensable to the best nutrition. We would need to

have a strong stand taken, however, to make it impossible for anyone to pack substandard stuff. For, when a housewife buys a jar of poor quality of marmalade, she is rightfully dissatisfied and is apt to condemn all citrus marmalades. The success of any business is founded upon the confidence of the consumer in that business, and many a glass of hodge-podge has been sent out under a fancy label that was not worth the price of the transparent shell in which it was shipped. That was a few years ago, we are not doing that in Florida anymore.

Candying or crystallizing citrus fruit or peel is a product that deserves more attention than it has received—not only as a fancy confection, such as our women are interested in making, but as a wholesale product for the use of bakeries and the ice cream trade. It would seem as if this product should be carried along in connection with our grapefruit canners to take care of the extravagant waste of good peel there.

The preservation of fruits, also vegetables—by saturating them with sugar and then covering them with a coat of sugar crystals, is one of the oldest methods of fruit preservation used as a sweet-meat probably from the time that sugar became a common ingredient in the preparation of food for the table. It is well known that candied vegetables have been used for many centuries in the culinary preparations of Oriental people, notably the Chinese.

Because of the lengthy process in preparing the fruit, the excessive amount of sugar required, such a product must of necessity command a high price. In crystallizing, just as in other processes, the sugar mixtures, sugar concentration and temperature found best, must be maintained if a uniform quality is to be secured. Of course, the quality of the fruit in the first place, determines the quality of the candied peel. It must be well ripened and full flavored, with all blemishes removed, never of green or pre-maturely colored fruit for a high grade product.

There is considerable case-hardened, tough, dry crystalline fruit found in our markets, due principally, I think, to the fact that the process is not carried over a sufficient length of time. Far too much, poor flavored, amateurish stuff, all of which tends to mitigate against building up a popular high-class industry, the slogan for which must always be "Quality first."

The discovery of the existence of those little things which are called vitamins—the word vitamin means

"life preserver" it means essential to life) was the work of several scientists, but they were christened by that warning name by a celebrated scientist by the name of Funk. Scientists have agreed that Funk did not overestimate their importance when he called them by that name. It was time we were finding out something about them, for the health of the American people was, and is undoubtedly suffering from the fact that they were not and are not, being utilized in the diet as Mother Nature, herself a pretty good scientist, provides. We do not know yet exactly what vitamins are, or how to make them. But we do know that we must obtain them as we do our calories, from the grocer, not the druggist, and that we must prepare our food so as to conserve these vitamins, for some of them are delicate and easily destroyed.

Among the most valuable constituents of citrus juices are the vitamins so called Vitamin A, B and C. Now it is known that vitamin A is found also in cold pressed orange and lemon oil, obtained by extraction with ether. It has also been recently shown that the outer oil bearing portion of lemon peel and the alcoholic extract, made therefrom, contain Vitamin B in such quantities as to make it comparable with yeast as a source of Vitamin B. Work along these lines, however, has not yet been thoroughly developed as the work on Vitamin C, whose presence in the juice of oranges and lemons has been thoroughly demonstrated by many research workers for sometime. Because of its peculiar potency and indeed its indispensability in the cure and prevention of scurvy, Vitamin C is known as the anti-scurvy, or anti-scorbutic Vitamin.

While scurvy is frequently spoken of, and the expression anti-scorbutic vitamin is frequently used in discussing Vitamin C, there seems to be no definite idea in the minds of many people as to just what scurvy is and how it affects the individual who contracts it. I shall not here enter into a discussion of the prevalence, effects and cause of scurvy—sufficient to say that there are still vast numbers of cases in the world today with the most repulsive and distressing symptoms of fully developed scurvy.

We should be concerned, however, in the milder forms of scurvy—incipient cases, doctors tell us, that are practically impossible for accurate diagnosis, minor pains, general inefficiency, greatly impaired vitality and usefulness, with increased susceptibility to all sorts of infections.

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These cases cause great loss of working ability and should warn each and all of us to include an anti-scorbutic of known value in the daily diet. There is no more reliable source of the anti-scorbutic vitamin than orange juice.

Priston, in his article in the Journal of the Royal Naval Medical Service, recommends a concentrated orange juice manufactured in California, for adoption as the official anti-scorbutic for the British Navy. It being estimated that 50 gallons of the concentrate contain sufficient Vitamin C to supplement the supply available in the British tropical war diet of 1200 men for three months, and that 4000 pounds would be saved annually by substituting the concentrated orange juice for the lime juice now issued.

There is a great need for concentrated citrus juices, preserved so as to retain their full vitamin content, since it has been proven by a number of separate and entirely independent investigations that orange juice products can be highly concentrated or reduced to a dry powder form without appreciable loss of Vitamin C. (Copies of the research work on this subject may be obtained from the University of California. This work should be of interest to the citrus growers of Florida.)

I would like to see an advertising campaign "Buy a Box" put on. Oranges purchased by the dozen or less, forces the dealer to ask a price for them that frequently exceeds eight, ten and more dollars a box. Such prices discourage consumption and the only way to overcome such obstacles is to urge that they be bought in larger quantities. Tell the housewife and mother that intelligent buying will reduce the cost, and that citrus fruit is so crammed with wonders, so blest with benevolence towards the human family, that the pantry in which they are seldom visitors, is not a pantry at all, but a branch office of the undertakers.

Many states, the State of Florida included, as everyone knows, are flooded with soft drinks, masquerading under misleading labels. By far the majority of them are concocted of various chemicals, made up to have flavors resembling fruit juices, artificially colored, and some containing habit forming drugs. These synthetic drinks have none of the virtues of the refreshing, healthful fruit drinks, which they strive to imitate; and even if not actually poisonous, they are neither very digestible nor very good, and they undoubtedly affect the health just to the extent that they are taken. (A great many food

errors do not always show their effects immediately nor even the next day, nor the next, but it is just as possible for these errors to store up trouble for a later day, as it is to lay up money for a rainy one.)

With our growing population, consuming quantities of synthetic drinks daily—all kinds of fake fruit drinks, because no true fruit drinks are made known to them—I think it is hardly the fault of the masses, that citrus fruit juice and other fruit juices do not enjoy many thousand times the present demand. Even those that desire them can rarely find them and therefore, the consumption cannot make headway. It would not take much originality to push these true fruit juices to the front, for it would only be necessary, in a way, to copy the successful methods of the manufacturers of scores of fake beverages, marketed to day with striking success.

One enterprising state in the Middle West kept tally on the synthetic drinks sold in one week at their State Fair. They claim \$50,000 from the visitors to the Fair from an average of two bottles to the person.

Estimating the annual expenditure for all the United States, we arrive at the figure of \$6.00 per person, based on a 5c per bottle price, the average amount per person spent in one year for soft drinks. There are 125,000,000 persons in the United States, and 125,000,000 times \$6.00 makes \$750,000,000. (And this is a low estimate.)

Think of it, Citrus Growers!

\$750,000,000 for soft drinks of synthetic, right here in a country where fresh fruit is grown year after year, and, at the same time, while the fresh fruit is sent to the dump in appalling amounts.

\$750,000,000 for soft drinks of little food value and few healthful qualities.

\$750,000,000 that these people, I believe, would rather spend for a real fruit drink if they could get it. Instead of coal tar dyes, synthetic flavors and chemical preservatives, let us substitute the golden fruit juices, that Florida can so abundantly supply.

Any captain of industry would tell us that the largest profits in his business accrue from the complete utilization of the waste products. The industrial chiefs would leave nothing undone until ways and means were found to turn loss into profit. Florida should get behind her waste and make use of all her varied and interesting products.

We have already been shown many

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Effect of Spraying With Fungicides on Keeping Quality of Florida Citrus Fruits

By Harry R. Fulton Pathologist and John J. Bowman Assistant Pathologist Office of Fruit Disease Bureau of Plant Industry

Major Rots of Florida Citrus Fruits

Florida oranges and grapefruit are subject to three important rots during marketing. These are blue-mold rot and the two forms of stem-end rot. Practically all of the blue-mold rot is caused by the olive-green fungus *Penicillium digitatum*, but occasionally the blue-green *P. italicum* is responsible.

Blue-mold rot develops only after injuries have destroyed the naturally effective protective covering of the fruit and is prompt in showing up at ordinary temperatures. It can be reduced by stopping picking operations in periods of wet weather when fruit is tender, by careful handling to prevent injuries to the fruit, by keeping the fruit surface from remaining moist for any prolonged period, and by lowering the temperature during shipping and storage to retard the development of the rot, or by treating during packing with a protective antiseptic wash, such as a solution of borax.

The more common cause of stem-end rot is the *Phomopsis* stage of *Diaporthe citri* Wolf, which also produces the melanose blemish of the young fruit. The less common cause of stem-end rot is perhaps two or more species or strains of *Diplodia* which have been included rather indiscriminately under the name *Diplodia* infest dead twigs in citrus trees and produce spores abundantly in these twigs. The spores seem to infect first some portion of the stem button while the fruit is on the tree, and advance into the fruit proper usually after picking. Both types of stem-end rot develop independently of injuries, are more serious in marketing than in the groves, and are very irregular in the time required for rot to develop after picking. They can be more or less effectively reduced by pruning out deadwood to reduce the source of infection, by spraying with an effective fungicide, by proper removal of the stem buttons immediately after picking (to prevent infection), by lowering the temperature during shipping and storage (to retard development of the rot), by treating

the fruit with a solution of borax during packing, and by speeding up the marketing to insure consumption before development of considerable rot.

Blue-mold rot, because of its comparatively rapid development, is often apparent while the fruit is being packed or when it arrives at destination. The two stem-end rots may not develop until the fruit has passed through the intermediate channels of trade and reached the retailer or the consumer. The relative possible amounts of these three rots in carefully handled seedling oranges held at 70° F. may be judged from the experimental data hereinafter reported. The high temperatures prevailing in early fall and late spring favor stem-end rot, especially the *Diplodia* type. Most of the Florida citrus fruit is shipped between Thanksgiving and Easter, when temperature conditions are more favorable for blue-mold and the *Phomopsis* form of stem-end rot, produced by miscellaneous fungi belonging to such genera as *Colletotrichum*, *Gloeosporium*, *Alternaria*, *Fusarium*, *Rhizopus*, *Aspergillus*, and *Oospora*. Most of these attack fruit that is reaching a condition of advanced decline or has been subjected to unusual conditions. Under ordinary conditions they are seldom of any great economic importance.

Most of the control measures for the major rots of Florida citrus fruits are applied after the removal from the tree. As a rule the grower of the fruit does not directly attend to the picking, packing, and shipping, but leaves these operations to the commercial packing houses. His responsibility for producing fruit of good keeping quality is restricted largely to the adoption of proper cultural and fertilizing practices for the production of good fruit and to the practice, when practicable, of two of the special control measures mentioned above, namely, the pruning out of deadwood and the spraying with an effective fungicide.

The pruning out of deadwood within the practical limits of economical grove operation has been found to have very little if any im-

mediate effect in controlling *Phomopsis* stem-end rot. It reduces *Diplodia* stem-end rot about 50 per cent. With *Diplodia* causing perhaps one-fourth of all the expected stem-end rot, this reduction would amount to one-eighth of the total stem-end rot, which is not enough to justify any special expenditures for pruning above what is ordinarily required in good grove practice. Probably the greater effectiveness of pruning against *Diplodia* rot is due to the fact that *Diplodia* is found for the most part on the larger twigs and limbs that can be rather thoroughly removed. It is not practicable to remove the innumerable small sprigs and fruit stems that regularly harbor *Phomopsis*, and so infection by this fungus is not materially checked by the ordinary pruning.

Spraying experiments conducted in Florida by the Office of Fruit Diseases during 1920 and the seasons following have shown that melanose, caused by the same fungus (*Phomopsis*) that produces the more usual type of stem-end rot, can be satisfactorily controlled by one application, made the latter part of April or early in May, 3-3-50 Bordeaux mixture plus 1 per cent of oil as emulsion.

Experimental Methods

The present investigation, begun in 1920, has had for its object to determine what effect, if any, spraying the fruit with fungicides has on its keeping qualities. At the outset it was assumed that sprays applied in the fall or during the summer rainy season might be most effective for this purpose. With the development of extensive tests in April and May for melanose control, to which reference has been made, these experimental plots were drawn upon for samples for holdtests, thus covering the whole period of development of the fruit.

The experiments were conducted at Orlando, Fla. Large seedling orange trees with a considerable amount of dead twigs to harbor the stem-end rot fungi were used. Grapefruits were tested sufficiently on all important points to warrant extending to

1. Spraying & dusting, citrus fruits
2. Fungicides, citrus fruit

them the conclusions drawn from the tests on oranges. The spray was applied with paired angle disk nozzles and with a pressure of approximately 300 pounds or more. Ten to twenty-five trees, requiring about 8 gallons of spray to the tree, were included in each plot, and the plots were duplicated. The experimental grove regularly received a general oil spraying each year about July 1 and usually an additional application in the fall. These treatments successfully kept scale insects under control, even where several applications of Bordeaux mixture were made yearly. (Ordinarily citrus insect pests increase following the use of copper sprays, because of the control effect on their fungus parasites.) All plots were dusted with sulphur for the control of rust mites, or in the earlier years of the work were sprayed with dilute lime-sulphur solution for the same purpose. No appreciable fungicidal effect against melanose or fruit rots is to be attributed to these sulphur applications. The check plots were included in such insecticidal treatments.

Samples of fruit were taken first when just mature enough for marketing and two or three times later at intervals of about three weeks, thus covering the normal marketing period for the fruit in question. Random samples of 50 fruits were taken in duplicate on each sampling of each spray treatment each season. In some seasons circumstances prevented the collection of this full sampling. The fruit was handled carefully to avoid injury that might lead to blue-mold infection.

In order to hold the fruit under conditions favorable for the development of any form of decay, it was placed unwrapped in open boxes in a constant-temperature room held at approximately 70° F. Wet cloths were used to maintain a rather high degree of humidity. These test conditions were much more severe than Florida citrus fruit ordinarily encounters in commercial channels, and the resultant rot was a maximum showing. It is assumed that the effectiveness of any treatment would be proportionately as great, if not greater under less severe conditions. The fruit was examined at 3-day intervals over a period of 36 or more days. Cultures were made, to distinguish between the two organisms causing stem-end rot, as well as to diagnose accurately other rots not certainly recognizable in their early stages.

Single Applications of Standard Bordeaux Oil

In analyzing the effects of single

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applications of standard 3-3-50 Bordeaux plus 1 per cent oil it is useful to combine results of those applications made during the period for best and surest melanose control, taken to be from April 15 to May 5. This is for two reasons—because melanose is likely to require such spraying in the very groves in which stem-end rot is most prevalent, and because there might be expected to be a correlation between the control of melanose and that of the form of stem-end rot caused by the same organism. Applications made before April 15 constitute another natural group. Practically all of these were made between March 25 and April 15 and showed very satisfactory control of melanose. The young fruit is known to pass out of its susceptible condition for melanose about June 15, and the rainy season starts at about that time, so this date is another convenient dividing point.

As has been indicated, the experiments were planned the first two years to include a relatively large number of tests during the rainy season and later. The interval between dates of spraying for successive plots was usually 10 days, but sometimes was as long as 15 days. A proper weighting of the averages would compensate for irregularities in the number of oranges in the samples as well as for the variations in numbers of tests included in the several periods and for the several seasons; but the form presented suffices for a practical showing of how general keeping quality of the fruit is affected by single applications made at various times and over a term of years of what has proved to be the most effective available fungicide. The best results came from spraying during the period of best melanose control, April 15 to May 5. Spraying before this period gave better results than spraying after it, which also agrees with the results obtained in melanose control. Very little benefit came from spraying in summer or fall.

The general conclusion is that a spray application properly timed for melanose control is the most effective for reduction of total rot after the fruit is picked.

Phomopsis rot is greatly reduced in the once-sprayed fruit, and *Penicillium* and miscellaneous rots are only slightly reduced during the first part of the holding period but are distinctly reduced after. During this latter period the quick-developing *Penicillium* is not a considerable factor, and old-age rots, such as *Colletotrichum* and *Fusarium*, make their appearance. *Diplodia* rot is not ma-

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terially affected in absolute amount. It must be remembered, however, that when the fruit is protected from other rots there is a proportionate increase in the chance for *Diplodia* rot to develop. The fact that the absolute number of cases of *Diplodia* rot remains practically unchanged, in spite of an increase in the fruit that is saved from other rots and so remains in the test long enough to develop *Diplodia* rot, means that the liability to development of this last rot is really reduced. This is further shown in Table 2 for four of the seasons in question, where one application of Bordeaux-oil is shown to have had an effectiveness of 19 per cent against *Diplodia* rot. The same treatment had an effectiveness of 60 per cent, or about three times as great, against *Phomopsis* rot.

Two or More Applications of Standard Bordeaux-Oil

In the case of the plots on which two application of 3-3-50 Bordeaux mixture plus 1 per cent oil were made, the interval between sprayings of a particular plot usually 10, 20, or 30 days.

It is apparent that there is only slightly increased benefit from two applications as compared with one well-timed application, not enough to justify the doubled expense of the spray operation. It will be noted that two-spray operations starting before April 15 gave better results than those started during the period for best single-spray control, April 15 to May 5: This is to be expected when one considers that in most cases the former plots received the second application some time during this period of best single-spray control and that their first application was during the second-best period. On the other hand, when spraying started during the period from April 15 to May 5, the second application fell, as a rule, during the third-best period for single-spray control.

Two-spray tests starting after May 5 were not very numerous for the reason that this line of testing was discontinued after two years, when it was clear that spraying begun so late gave relatively slight control. A considerable number of late-season plots were sprayed three or more times without showing as good control as was obtained by a single earlier application.

Three-spray tests during April and May gave better control than two-spray tests during the same period but such a frequent schedule is not practicable.

Effectiveness of one and two Applications of Bordeaux-Oil

The relative degree of effectiveness

indicated by each of the several lines in Figure 2 has been calculated. The term "percentage of effectiveness" is used for the final result. A 100 per cent of effectiveness means that no rot occurred. A 25 per cent of effectiveness means that one-fourth of the oranges that otherwise would have rotted were saved by the treatment; that is, a possible rot of, say, 10 per cent of the fruit would be reduced to an actual loss of 7½ per cent. A zero percentage of effectiveness indicates no control of rot whatever.

Table 1 gives the percentages of effectiveness for the lots of fruit shown in Figures 2 and 5, as well as certain particulars about the scope of the tests. The table includes results for both one and two applications of spray. Each percentage of effectiveness is an average for the number of seasons indicated and is based on the showing of rot from unsprayed check plots for these particular groups of seasons. With the natural fluctuations in the amount of rot from year to year, the figures of average percentage of rot do not give as accurate a basis of comparison as do the percentages of effectiveness.

Table 1.—Results of spraying experiments with 3-3-50 Bordeaux mixture plus 1 per cent oil for control of rot in oranges

Applications of spray	Number of seasons	Total tests	Total oranges	Average Percentage of rot (36 day period)	Percentage of effectiveness (36 day period)
1 application before Apr. 15.....	4	10	2,200	19.3	27
1 application between Apr. 15 and May 5.....	5	10	2,050	17.7	33
1 application between May 6 and June 15.....	5	18	3,797	23.2	12
1 application after June 15.....	6	22	3,680	24.6	6
2 applications, starting before Apr. 15.....	6	22	3,860	24.6	42
2 applications, starting in period from Apr. 15 to May 5.....	5	16	3,533	16.3	38
Unsprayed checks.....	4 to 6	Up to 8,850			0

1 For each of the treated groups a special check was calculated, including the unsprayed plots for the particular seasons in question.

Modified Copper Sprays

Preliminary tests were made with a representative group of copper sprays and dusts to determine whether any gave promise of superiority over the standard 3-3-50 Bordeaux-oil formula. The tests were not repeated over a period long enough to justify extensive statistical treatment. However, the indications seem to be definite enough to warrant a summary of the results obtained but not to justify further extensive tests.

In 1921 and 1922 tests were made of 1-1-50 Bordeaux-oil, using 1, 2, and 3 applications during the period for best control. One application of this spray was about half as effective, when all rots are considered, as 1 application of 3-3-50 Bordeaux-oil made at the same time. Two applications were slightly better than 1 application of the full-strength spray, but not so good as 2 applications of

the latter. Three applications were about on a par with the same number of applications of the 3-3-50 Bordeaux-oil.

A 2-2-50 Bordeaux-oil was used in 1, 2, and 3 applications during 1922, with results about the same as for equal numbers of applications of 3-3-50 Bordeaux-oil. However, this reduction in the strength of spray below the standard 3-3-50 formula showed a distinct falling off in effectiveness in the case of melanose.

Tests were made in 1922 with neutral Bordeaux-oil in which just enough milk of lime was used to combine with the standard quantity of bluestone, and also with "improperly prepared" Bordeaux-oil in which concentrated stock solutions of bluestone and of lime were mixed before diluting. The first in 1, 2, and 3 applications was fully as good as the standard Bordeaux-oil. The second was distinctly less effective than the standard mixture in 2 and 3 applications. No test was made with single applications.

A copper soap spray containing one-half pound of copper sulphate and 3 pounds of resin-fish oil soap in 50 gallons of water was used dur-

dust were made on trees wet with dew. Instead of showing a gain in effectiveness the treated fruit developed about 10 per cent more rot than the untreated checks.

Lime-Sulphur Sprays

During the four seasons of 1921, 1922, 1923, and 1925, lime-sulphur solution was tested in 1-40 dilution and in three-application schedules during the rot-control period, April 15 to May 5. The results are shown in Table 2.

During one of the four seasons in question no 3-application test of standard Bordeaux-oil was made; the two 2-application tests for that season have been included with the five 3-application tests for the other three seasons to furnish a basis for comparison. During these four years eight 1-application tests of standard Bordeaux-oil were made during the periods covered by the lime-sulphur schedules. The results of these are also included for comparison.

Considering all rots, three applications of 1-40 lime-sulphur solution were about one-fourth as effective as a single application of standard Bordeaux-oil spray and about one-fifth as effective as three applications of the latter. The effectiveness against the Phomopsis type of stem-end rot is in general about half as great as for the standard Bordeaux-oil. A surprising feature is that the Diplodia rot in the lots of fruit sprayed with lime-sulphur solution were about 50 per cent greater than in the unsprayed fruit.

In 1921, tests were made with 1 and 2 applications of 1-40 lime-sulphur solution and with 1, 2, and 3 applications of dry lime-sulphur made up at the rate of 4.4 pounds to 40 gallons of water. All 5 of these tests gave more rot in the sprayed fruit than in the unsprayed checks. This excess of rot in the sprayed fruit ranged from 17 to 36 per cent, and

Table 2.—Results of spraying experiments with 1-40 lime-sulphur solution and with 3-3-50 Bordeaux mixture plus 1 per cent oil for control of rot in oranges.

Spray and applications	Number of seasons	Total tests	Percentage of effectiveness for 36-day period		
			All rots	Phomopsis rot ¹	Diplodia rot ¹
1-40 lime-sulphur, 3 applications.....	4	5	11	33	2-51
3-3-50 Bordeaux plus 1 per cent oil, 2 or 3 applications.....	4	7	55	72	24
3-3-50 Bordeaux plus 1 per cent oil, 1 application.....	4	8	48	60	19
Unsprayed.....	4	6	0	0	0

1 The percentages of effectiveness for Phomopsis and Diplodia considered separately are computed as follows: The 3-day rot caused by each fungus is divided by the number of fruits in the test during the particular 3-day period; these percentages are added cumulatively; an average of values of such cumulative index figures is obtained by dividing by the total number of 3-day periods covered in the test; such average for sprayed fruit is subtracted from a similar average for the unsprayed check, and the difference is divided by the average for the unsprayed check to determine the percentage of effectiveness.

2 A minus value for the percentage of effectiveness means that the treated fruit developed more rot than the untreated checks.

deaux-oil.

In 1925 two tests with two applications of 80-20 lime-copper sulphate

there was excess for Phomopsis as well as for Diplodia rot, relatively
Continued on page 30

Government Regulations Issued Covering Produce Agency Act

Secretary of Agriculture Jardine has issued regulations covering the administration of the Produce Agency Act passed at the last session of Congress. Administration of the act, which deals with the marketing of perishable agricultural products, is in charge of the Bureau of Agricultural Economics of the Department of Agriculture.

Lloyd S. Tenny, Chief of the Bureau of Agricultural Economics, declared in a supplementary statement accompanying the regulations that "the Act makes it a misdemeanor for anyone receiving perishable farm products in interstate commerce for or on behalf of another to dump, abandon, or destroy the products so received without good and sufficient cause therefor; that it is a misdemeanor for anyone receiving such products for or on behalf of another in interstate commerce to fail, knowingly and with intent to defraud to account truly and correctly therefor, and a misdemeanor for anyone receiving such products in interstate commerce, for or on behalf of another, knowingly and with intent to defraud, to make any false statement concerning the handling, condition, quality, quantity, sale, or disposition thereof.

"In considering the act and the regulations thereunder, numerous questions will arise in the minds of the handlers of perishable farm products as to when and under what circumstances the act is applicable. It is not possible for the department to foresee and announce in advance all of the instances in which the act may apply. In its enforcement, the department necessarily must consider each transaction that may come in to question strictly upon the facts relating thereto.

In general, it may be stated, however, that all persons, firms, associations or corporations receiving provisions of the act. Obviously the act applies, therefore, not only to commission merchants but also to distributors, brokers, and others whenever they receive produce in interstate commerce or in the District of Columbia to be handled for or on behalf of another.

"The act and the regulations there-

under provide that a certificate may be obtained on produce that is without commercial value when such produce is intended to be dumped, abandoned, or destroyed. The purpose of such a certificate is to protect the receiver subject to the act by furnishing him with evidence which he may submit to his principal to show that he has 'good and sufficient cause' for dumping, abandoning, or destroying the produce. The act does not under any circumstances require that a certificate be obtained before the produce is dumped, abandoned, or destroyed. If the receiver is satisfied that he has good and sufficient cause for dumping, abandoning, or destroying the produce and does not care for the protection of a certificate in justification of such action on his part, he is not required to have the produce inspected.

"If a certificate is obtained it will not meet the requirements of the act unless it is issued by a person in one of the classes designated in the regulations and unless it states that the produce was without commercial value at the time of inspection. If the produce received is without commercial value at the time of inspection. If the produce received is without commercial value without reconditioning but could be reconditioned and sold for more than the cost of reconditioning, the receiver would be expected to recondition the produce and dispose of it to the best advantage of his principal.

"The pooling of different lots of produce received for sale, or the pooling and averaging of various prices received for different lots of produce, unless the shipper or owner of the produce has agreed thereto, is not authorized by the act. The department also believes that if an agency subject to the act sells part or all of a consignment of produce to itself or to a jobbing department of its business, or to a concern in which it has a financial interest or which is financially interested in the agency, then as a safeguard and in order to obviate possible misunderstandings it should disclose the fact to the shipper in accounting for the produce."

Regulation 1. Definitions

Section 1. Words used in these regulations in the singular form shall be deemed to import the plural, and vice versa as the case may demand.

Section 2. For the purpose of these regulations, unless the context otherwise requires, the following terms shall be construed, respectively, to mean:

Paragraph 1. The "Produce Agency Act", or the Act.—An Act of Congress entitled "An Act to prevent the destruction or dumping, without good and sufficient cause therefor, of farm produce received in interstate commerce by commission merchants and others, and to require them truly and correctly to account for all farm produce received by them," approved March 3, 1927 (44 Stat. 1355).

Paragraph 2. Person.—Individual, firm, association, or corporation.

Paragraph 3. Secretary. — The Secretary of Agriculture of the United States.

Paragraph 4. Chief of Bureau.—The Chief of the Bureau of Agricultural Economics of the United States Department of Agriculture.

Paragraph 5. Produce.—The term "produce" as used in the act means fruits, vegetables, melons, dairy or poultry products, or any perishable farm product of any kind or character.

Paragraph 6. Good and sufficient cause.—This term (with respect to destroyed, abandoned, discarded or dumped produce, shall be deemed to mean that the produce so dealt with had no commercial value, or that some other legal justification for so dealing with such produce existed, such as an order of condemnation by a health officer or definite authority from the shipper.

Regulation 2. Administration

Section 1. The Chief of Bureau shall perform for and under the supervision of the Secretary such duties as the Secretary may require in enforcing the provisions of this act and these rules and regulations.

Regulation 3. Violations

Section 1. Any person receiving produce in interstate commerce or in the District of Columbia for or on

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The Citrus Industry

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GROVE CALENDAR FOR JUNE

Some Timely Suggestions For Grove Work During The Present Month

Stop cultivating bearing groves when summer rains begin.

Finish fertilizing this month.

Plant bush velvet beans or cow peas in the middles of young groves.

Prune out dead wood in citrus to control wither tip.

Watch for rust mites on citrus and at the first appearance dust with sulphur or spray with lime sulphur, (1 to 70).

Spread the parasitic fungi to control whitefly and purple scale on citrus, especially on trees sprayed with bordeaux or bordeaux oil.

Spray pecan trees with 4-4-50 bordeaux to control pecan scab; repeat every three or four weeks during the summer.

CONSIDERING MARKETING PROBLEMS

As this issue of The Citrus Industry goes to press a conference is in progress at Washington between Secretary of Agriculture Jardine and members of a committee from the Fruitman's Club of Florida. At this conference Secretary Jardine will present to the Florida ship-

pers a plan which he hopes will solve, or largely solve, the marketing problems of Florida citrus growers.

This conference is held at the invitation of Secretary Jardine extended to the Fruitman's Club through Commissioner Nathan Mayo of the Florida Agricultural Department as the result of a visit to Washington some weeks ago.

The invitation was extended to Florida citrus growers and shippers by Commissioner Nathan Mayo at a meeting of the Fruitman's Club in Orlando on April 26th. In accepting the invitation of Secretary Jardine the Fruitman's Club appointed through President V.B. Newton the following committee to meet the Secretary of Agriculture in Washington on June 13th; C. C. Commander, General Manager Florida Citrus Exchange, F.L. Skelly, general manager, American Fruit Growers, Inc., Lawrence Gentile, J.C. Chase and W.H. Mouser of Orlando, L. Maxcy, Frostproof, and Bernard Kilgore of Clearwater. In addition to this committee from the Fruitman's Club it is expected that President Newton and Commissioner Mayo will be present at the conference as also will a committee of Florida bankers, including Dr. L.A. Bize, of Tampa, and Mr. E.L. Wirt, of Bartow.

The Citrus Industry hopes that Secretary Jardine may have some definite feasible plan to submit to the Florida marketing agencies, one which will command the respect and unite the support of all Florida citrus factors. A solution of Florida's marketing problem whereby the effects of the various marketing agencies might be co-ordinated has long been sought by these agencies but up to this time no plan submitted has seemed to afford a common ground for united action. It is to be hoped that Secretary Jardine has discovered a successful plan. If he has we opine that Florida citrus factors will be ready to embrace it.

The Citrus Industry awaits announcement of the outcome of the Washington conference with deepest interest and trusts that it may form the basis for the solution of our marketing problems insofar as co-ordinated effort can supply such solution.

COMPULSORY SPRAYING IN TEXAS

Texas is a comparatively new entrant into the field of citrus culture. Citrus constitutes a very small percentage of the agricultural or horticultural products of the Lone Star State. Yet it is apparent that Texas and the law makers of Texas appreciate the possibilities of citrus expansion in that state and the necessity for protecting the industry.

A recent law enacted by the Texas legislature becoming effective June 16th, makes compulsory the effective use of sprays or other insecticides in cleaning up the groves in the state. The law also applies to scattered plantings of citrus trees in cities and towns as a precautionary measure against infection of commercial groves. Indeed, it is more than hinted that the law had its inception in the belief that such scattered plantings constitute a menace to the commercial groves of the state. It is pointed out that a lot of sour orange trees are growing in the towns of the Rio Grande Valley whose

owners fail to realize that their trees are harboring insects and diseases that are damaging to the commercial groves. The city folks do not attend spraying demonstrations and have not had this important matter called to their attention.

California has a compulsory citrus cleanup law which is said to have had its inception in the desire to protect commercial groves from these scattered town and city plantings.

Florida alone, of the important citrus producing states, has no statewide law compelling owners of citrus trees to keep them in clean and healthful condition. There has been from time to time considerable agitation for such a law but up to the present time citrus interests have failed to get together in any concerted action to bring about such legislation at the hands of the Florida law makers.

The Citrus Industry believes that one of the leading factors in the production of better fruit, and through such production to the solution of a major part of our citrus price problem, lies in the enactment and enforcement of a law providing for compulsory spraying, dusting or fumigation not only of commercial citrus groves but of scattered door yard plantings. By the time another legislature meets, citrus interests should be so united upon some such measure as to be able to quickly force its enactment into law.

THE WARNING FROM WASHINGTON

The threat of the federal horticultural board that Valley citrus fruit will be quarantined unless the Morelos orange worm, better known as the Mexican fruit fly, is eradicated, is a matter of serious concern to the citrus fruit growers of the Lower Rio Grande Valley.

Citrus experts and entomologists state that there is but one control for this pest—through clean-up of the Valley's citrus groves, and the maintenance of conditions which will prevent the fly from propagating in sufficient numbers to become a menace to the Valley fruit crop.

The fact that the fly has infested many of the citrus fruit districts of Mexico is generally known. Entomologists have found it in abundance on the Mexican side of the border the infestation being so great at some points that practically no fruit can be raised. This infestation is due to the fact that the punctured fruit, which contains the maggots of the fly, is not destroyed when it drops from the tree. The fly has evidently been brought across the border in smuggled fruit, the quarantine against fruit being very strictly enforced, and entomologists express the opinion that the fly could not have been carried across the river by winds or other means except in fruit.

The federal horticultural board is interested in protecting the citrus industry of the United States. They are obliged to take such steps as may be necessary to prevent the spread of this pest to Florida, California, Arizona and Louisiana citrus areas. Their inspectors have found various groves in the Lower Rio Grande Valley infested, and their only recourse is to impose a quarantine, unless prompt measures are taken to combat the pest and the assurance given

that Valley fruit will not carry the infestation to other districts. A meeting of the growers will probably be called in a few days, and it is very essential that every grower in the Valley attend, acquaint himself with the menace the new pest presents and learn the proper means of successfully controlling it. With the menace of a quarantine impending, concerted action on the part of the growers will be necessary. It will be of no avail for a few to clean up their orchards—the clean-up must be Valley-wide; and when the hearing before the federal board is held on June 20, the Valley should be prepared to present a clean bill of health.

It is extremely unfortunate that the compulsory spraying law will not apply in this case. The law was framed with a view of controlling pests with which the Valley was at that time familiar, pests which can be controlled by spraying or dusting. However, neither of these are effective in controlling the Mexican fruit fly, the maggots of which snugly ensconced beneath the peel of the fruit, are impervious to effects of the spray. The one control, according to government entomologists, is a thorough clean-up and the destruction by burning of all fruit which drops from the trees.

It is also unfortunate that the citrus growers of the Lower Rio Grande Valley are to a great extent unorganized, as this is a condition which calls for organized effort. The growers affiliated with the Texas Fruit Exchange and similar organizations in the Valley will doubtless be a unit in aiding the clean-up campaign, but they must have the united cooperation of other growers if the Valley is to escape the impending quarantine.—Brownsville, Texas, Herald.

ASKS AID FOR CANCER FIGHT

Citrus growers of the Rio Grande Valley in Texas through State pathologist J.M. DelCurto are asking the Federal Horticultural Board for an appropriation of \$5000.00 to aid the fight against citrus canker in Texas groves. This is the same amount which was appropriated by the Federal Horticultural Board last year.

The Texas State Department of Agriculture co-operates with federal representatives stationed in the Valley section in fighting canker as traces of it are found in many groves although, a recent survey shows that the disease has been held well in check. Mr. DelCurto made a tour of inspection over the valley before leaving for Washington to make his request and present his report.

PROMINENT FACTOR DEAD

W. F. (Billy) Miller, well known citrus factor, original promoter of the Exchange Supply Company, developer of grapefruit groves near Valrico, in Hillsboro county, leading real estate operator and financier, lost his life when his automobile plunged off an embankment into the Hillsboro river near Tampa, recently.

In the death of Billy Miller, the citrus industry of Florida lost one of its leading members and the state of Florida one of its most prominent citizens. In common with thousands of friends, The Citrus Industry mourns the death of a good citizen and a popular man.

NEW CITRUS PLANTINGS

Reports from Florida's leading citrus nurseries indicate that there is a much greater demand for citrus nursery stock this year than at any time for several seasons. This is particularly true of the larger and more important citrus nurseries which have established reputations for dependability and the production of quality found in the increasing demand for nursery stock.

A particularly encouraging feature is to be found in the increasing demand for nursery stock of finest quality, "Just any kind of stock" will not do. The planter now demands that his nursery stock must be first class. Nothing short of that will do. Also, the planter is paying more attention than formerly to varieties. There is less inclination to plant many varieties with the idea that "an orange is an orange" and that one variety is just about as good as another. The tendency in plantings this season is evidently towards one very early variety and one very late variety, the idea being to catch the high prices of the early shipments and the uniformly high prices of the very late shipments, ignoring the mid-season fruit which meets the greatest competition and brings the lowest price.

This season's planters also are showing a disposition to provide facilities to properly care for their groves after planting. Provision is being made for fighting insects and diseases and in many cases, too, foresight is being shown in providing protection against a possible freeze.

On the whole the plantings of the present season are being made with much more wisdom and with greater regard for the future than has previously been the rule.

TEXAS REJECTS GREEN FRUIT LAW

While Texas has just shown its vital interest in the development of the citrus industry of that state by the enactment of a compulsory spraying law, it has in a measure nullified such action by failing to prohibit the shipment of green, immature, over-ripe, diseased or decayed fruit. True, the same legislature which enacted the compulsory spraying law, also enacted a law to prohibit the shipment of such undesirable fruit as above classified, but the law was vetoed by the governor because of legal complications.

However, in view of the deep interest which is being taken in the development of the citrus industry in Texas, it is to be expected and hoped that a new law will be enacted which will be free from the objectionable features which caused the veto of the original bill. Texas is too good a state and the citrus fruit grown in the Rio Grande Valley is of too fine a quality to permit the shipment of immature, over-ripe or decayed fruit to injure its reputation in the markets of the land.

The fruitmen's Club did a good work in getting those new terminal arrangements at New York City. The Fruitmen's Club is doing a good work for the Florida grower and shipper.

Plant new citrus groves—but plant wisely.

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* * * *

It has been brought to our attention that statements have been circulated to the effect that Zeltroicide infringes upon citrus fruit preservative treatments, composed largely of Borax. For the protection of all users of Zeltroicide and for the information of the trade we wish to advise all whom it may concern that Zeltroicide contains No Borax and that Zeltroicide does not, in any manner, infringe the rights or formulae of any other preservative.

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President and General Manager

LAKELAND FLORIDA

South Florida Burbank Has Created Modern Eden Garden 26 Miles SW. of Miami

By Hal Leyshon in Miami Daily News

Had the Garden of Eden been a modern Bonita Grove, temptation to partake of the fruit of the tree would have been multiplied some 288 times and the chances are Adam would never have had the effrontery to blame woman for his downfall.

Opportunity is afforded Miamians who are not averse to a 26-mile auto ride over a winding ribbon of asphalt that extends into the heart of the fertile Redlands six miles west of Goulds to see for themselves a modern paradise that not only matches 288 varieties of edible tree fruits against the fabled one of the Garden of Eden, but also boasts 56 varieties of fruiting bushes, 1,012 varieties of flowering bushes, 225 different annual flowers, 1,500 varieties of decorative shrubs and countless other actualities of subtropical plant experimentation.

Visitors to Bonita Grove will appreciate their inspection the more if they know something of the genius of the man responsible for its creation. Dr. J. Petersen, a German chemist and educator—awhite collar man, if you please—untutored in the lore of the dirt farmer, acquired the 60-acre tract five years ago. "I had two purposes in mind," Dr. Petersen told me. "First, being financially interested in the manufacture of commercial fertilizer I wanted to determine the soil requirements on fertilizer and, second, I wanted to demonstrate to my own satisfaction what could be done with the soil of this section."

Bonita Grove, probably one of the most remarkable agricultural projects anywhere in the sub-tropics, is the result of Dr. Petersen's quest for scientific knowledge of Florida's soils. The story of Bonita Grove is the story of its owner, and the experiences of Dr. Petersen that prompted him to lay down the test tube and retort in favor of the rake and the hoe read like a chapter from an Alger success book.

Dr. Petersen was vacationing in Paris when the war flame broke out on the continent. Not being subject to military duty with Germany and being a man of peace and letters, he came to America, planning to return as soon as the conflict ended. Not



Dr. J. Petersen

contented to continue his vacation indefinitely, Dr. Petersen became interested in the motion picture industry. Being known as a German chemist, his movements were watched closely by secret service operatives and when America entered the war he was shadowed even more determinedly. He moved from place to place, sacrificing business interests in the hope of being able to throw off suspicion and perhaps lose his shadowers. He was twice haled before U. S. Judge Kenesaw Mountain Landis in Chicago on suspicion. Once, he was charged with dynamiting railway bridges in Canada. The spy guilty of this espionage subsequently was caught and punished.

Dr. and Mrs. Petersen finally came to Florida. He says he was attracted by the possibilities of a canning enterprise to utilize the large waste in overproduction of grapefruit and oranges. He also hoped to settle down quietly and once and for all allay the suspicions of department of justice agents. But he was followed to Florida and finally the order came for his internment. At that time Dr. Petersen's assets amounted to nearly \$150,000. After 17 months' virtual imprisonment at Fort Oglethorpe, Ga. Dr. Petersen returned to Miami to find his wife and one of his two daughters working for their livelihood. At that time Dr. Petersen's possessions amounted to \$14.48, two shirts and one pair of trousers.

For a week he tramped the streets in search of work. There was little

employment available except day labor on the streets, and foremen didn't want workmen with uncalled-for hands. In desperation, Dr. Petersen donned overalls, dirtied his face and hands and, by this ruse, was able to obtain work. For five days he wielded a pick and shovel in a ditch for \$2.50 a day. In the meantime offers of associate professorships in the north had come and Dr. Petersen also had been able to obtain a small amount of cash on some of his non-liquid assets. He entered the fertilizer business. At first he walked as he called upon prospective customers. Soon he could afford a bicycle. Then came a used Ford, next a new Ford, until, in a year's time, he had 16 warehouses and 17 agents at work selling his product. Five years later he bought Bonita Grove, now said by horticulturists to be the most beautiful in the state.

First year's receipts from Dr. Petersen's investment in the grove were \$98. In 1925, his books showed a clear profit of \$98,812, proving that an experimental project in Florida agriculture may contribute to the pocketbook as well as to scientific knowledge. Dr. Petersen always has strived to combine economy and beauty and thousands who have seen his estate will testify to his success. The grove is a glowing example of the much-preached proverb of diversified and intensive farming. Every foot of ground is utilized.

Fruit trees are planted 20 feet apart. Under his plan of intensified cultivation it is possible within an area of 400 square feet to grow five different varieties of fruit trees, four flowering bushes and five kinds of vegetables.

Dr. Petersen is a staunch believer in the utility of humus. No trash is burned at Bonita Grove. It is converted into humus, which is later applied to the roots of his trees. Dr. Petersen believes the most important agricultural problem in Florida today is to conserve and increase the supply of humus in the soil. Two years ago Dr. Petersen had 140 acres in fruit trees. His total commercial fertilizer bill was \$1,410 or \$7.10 per acre as against an average of

nearly \$100 per acre for the well-cultivated Florida grove. His planting system is thorough. In preparing a bed for the tree, Dr. Petersen uses seven sticks of dynamite in column formation and four sticks are planted in a circumference of five feet. In this manner all rock is loosened and removed and the hole is filled with screened dirt.

"No drones allowed" is one of the axioms at Bonita Grove. Every plant must produce something useful and the highest standard of production is sought, not only with the whole grove, but with each individual tree or bush. This, of course, means individual treatment and Dr. Petersen's training as a chemist is helpful in aiding him to analyze and determine the soil requirements for each tree or shrub. Dr. Petersen says the hurricane proved his methods of planting worth while, for out of 6,000 citrus trees not one was blown down and uprooted by the wind, while the percentages of loss in neighboring groves were as high as 75 per cent.

As further evidence of the intensive cultivation of Bonita Grove is Dr. Petersen's preparation of rose beds for 30,000 plants, the rose beds utilizing the borders of drives and roads traversing the estate. This year he has 182 rose bushes, planted Nov. 15, which up till the middle of April had yielded 3,602 cut roses.

Marketing methods have been both unique and successful at Bonita Grove. Dr. Petersen has utilized the lawn of his estate fronting on Hainlin road as a show window and thousands of dollars' worth of fine fruits have been sold direct to the consumer.

Another phase in which Dr. Petersen's methods have differed widely with usual practice in this section is his utter disregard for spraying, which other growers have found essential to success. Dr. Petersen contends that if plants are cared for properly and are sturdy and healthy they are able to resist successfully almost any parasite common to this section.

Dr. Petersen's wide variety of fruits have been drawn mostly from sub-tropical climes and include trees, plants and shrubs from Abyssinia, Africa; the Himalayan mountains of India; Austria, Japan and China, Arabia, Italy, Spain and many South American countries. Some of the fruit tree importations especially edible and which have been acclimated to South Florida are:

Mangosten, from Ecuador and the Indian archipelago, perhaps the only one of his collection that is not commercially profitable.

Cherimoya, from the slopes of the

THE CITRUS INDUSTRY

Andes.

Itchi, China and the West Indies.

Papaya, native of Hawaii.

Kaki, of Japan.

Dates from Arabia.

Mangoes from India.

Jujube from Japan.

Pomegranate from Palestine.

Loquat from Brazil.

Pitanga from Brazil.

Jaboticoba from Brazil.

Cashew, of Brazil, a brilliant yellow fruit much like jello, juicy and acid.

Imbu, from Peru, acid and juicy.

Amberella, South America, acid and taste suggests apples.

Mumbin, red and yellow fruit. Grows in clusters like plums.

Annonaecons, from the same family as the sugar apple and pono apple. A fruit of great possibilities commercially.

Cherimoya, called "the masterpiece of nature, weighing from an ounce to five pounds, juicy, melts in mouth and tastes like combination of banana and pineapple. Native of Ecuador and Peru.

Purple granadilla or passion fruit; aromatic juicy pulp surrounding a number of small seeds.

Sweet granadilla; pulp almost liquid; perfumed in taste.

Twenty-seven varieties of guavas.

Pitanga or surinam cherry, from Brazil.

Rambutan, from Algeria.

Akee, from Brazil.

Longan, from Chile.

Sapodilla, from Africa, some varieties growing almost as large as coconuts.

Three varieties of the sapota family, all different in taste.

Star apple, from Jamaica.

Canistey, native of West Indies.

Mamey, said to be the first fruit reported found on the new continent by Columbus.

Breadfruit, from South Sea Islands.

Jackfruit, the largest single fruit known.

Santol, from Java.

Carambola, native of Philippine Islands.

Tamarind, from Nicaragua.

Carrissa, imported from Panama.

Ramontchi, from West Indies.

Night blooming cereus, flower and fruit.

Monstera deliciosa, a tree-like vine, native of Africa, whose fruit is sometimes a yard long and is used for salads.

Creation of new varieties of fruit by cross-pollination is a hobby with Dr. Petersen, at which he has been unusually successful. Creation of a bi-sexual papaya is probably Dr. Pe-

June, 1927

tersen's masterpiece in this department. Beginning with a tree the fruit of which averaged four ounces and hung on a stem a yard long, Dr. Petersen, through seven generations of cross-pollinating, was successful in producing a papaya weighing 42 pounds on a two-inch stem.

Dr. Petersen is a papaya "fan". He has proved that the fruit has great commercial possibilities in South Florida. He describes it thus: "A papaya is similar to a cantaloupe, but eating a cantaloupe is like betting on a horse—deliriously uncertain. Eating a papaya is like a perpetual honeymoon.

Dr. Petersen is justified in his enthusiasm for papayas, for on two acres planted to papayas he harvested and sold \$10,000 worth of fruit within 15 months after planting. This is believed to be a record for papaya production, even in Florida where conditions are ideal.

In five years Dr. Petersen has increased the valuation of his Redlands purchase from \$100, the purchase price, to an estimated value of nearly half a million dollars. And he has had lot of fun mixed with the work too.

Although he has every excuse for self esteem, he does not brag.

"Mrs. Petersen has furnished the inspiration and I the perspiration," he explains.

Here's Dr. Petersen's formula for success:

"Take 99 per cent elbow grease and one per cent of knowledge and mix with plenty of dirt."

"SMUDGE POT BOB"

VISITS FLORIDA

Smudge Pot Bob, as he is known to thousands of California citrus growers, is now in Florida to consult with Florida growers and already has discussed the subject of grove heating at several growers meetings. Smudge Pot Bob is R.M. Wathen, who for twenty years has engaged in the study of grove heating and the testing and handling of devices for the purpose.

He has been brought to Florida by the Scheu National Orchard Heater Co., which now maintains its Florida headquarters at Haines City under the direction of J.E. Palmer as state manager. Mr. Wathen is generally acknowledged as one of the foremost qualified experts in his line. In addition he is possessed of an ability to make a practical and commonsense application of that knowledge which has won the confidence of those Florida growers who have had contact with him.

BLUE GOOSE NEWS

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PAGE 1

BIRDSEYE VIEW OF THE FREEZE OF 1835

At one time or another, at the meetings of the Florida State Horticultural Society, and in writings, reference is made to the Freeze of 1835, which played havoc with the Florida citrus industry of that time, which then centered about Green Cove Springs, St. Augustine and the lower reaches of the St. Johns River.

Few growers, however, have any very definite idea concerning that event. Therefore a personal account of it from one who passed through it is of rather unusual interest.

In 1837 there was printed by a then well known New York publisher a book on the Territory of Florida, or "sketches of the topography, civil and natural history of the country, the climate and the Indian tribes from the first discovery to the present time." The author was John Lee Williams, a resident of the Territory of Florida since 1818, and a man of considerable scientific attainment being both a botanist and a geographer and having visited many sections of the state then practically unexplored by white men. Among his accomplishments was a careful survey of the Florida coast from the mouth of the Perdido River around Cape Sable and up to the mouth of the St. Mary's River.

This book comes to light as the property of Mrs. Lena Ayres of the traffic department of the Orlando offices of the American Fruit Growers Inc., who inherited it from a great uncle, O. F. Thompson, whose inscription on a fly leaf shows he purchased his copy in 1841. It is most interesting throughout, but for the present purpose we give only the author's own description of the Freeze of 1835.

"During the month of February 1835, East Florida was visited by a frost, much more severe than any before experienced. A severe north-west wind blew ten days in succession but more violent for about three

Continued on page 3

ANNUAL MEETING IS HELD AT NEW SMYRNA

The New Smyrna Packing Co. at New Smyrna held its annual meeting there on May 16; and reelected Roland E. Stevens president of the organization.

The New Smyrna Packing Co. operates one of the largest and most modern citrus packing houses in that section, and handles the fruit of numerous prominent growers in the vicinity. In checking up the activities of the past season at the meeting there were only compliments for the efficient distribution accomplished by the American Fruit Growers Inc. as sales agents for the organization.

LINE HAUL RATE CASE IS MAKING PROGRESS

With oral arguments on the Line Haul Rate Case now soon impending interest in this matter so vital to the citrus growers is rightly in order.

The chief argument for Florida will be made by R. Hudson Burr, former chairman of the Florida State Railroad Commission, who has been especially employed for the task at the urging of the Growers & Shippers League of Florida. Because of his long and intimate acquaintance with the matter it was the judgment of J. Curtis Robinson, manager of the League, that Mr. Burr is the one man best qualified for the task.

Following the oral arguments final consideration will come from the Interstate Commerce Commission, the decision being anticipated to be announced in the late autumn or early winter. As this case affects the rates on all fruits and vegetables shipped from Florida, and the League has prosecuted it so long and vigorously the final outcome will be awaited with more than ordinary interest by every grower.

MIMS GROWERS FIND SEASON SATISFACTORY

The annual meeting of the Broward Packing Co., at Mims was held on May 16 at the packing house there. Review of the season's operations was made and the season was declared a satisfactory one.

P. W. Roberts, president, and the other officers were reelected; and the marketing connection through the American Fruit Growers Inc. was reaffirmed.

VOLUSIA GROWERS INC. REELECT L. F. CHAPMAN

L. F. Chapman was reelected president of Volusia Growers Inc., at De Land, and the other officers also were reelected at the recent annual meeting there.

Volusia Growers Inc. as an organization is only three years old; but has made most substantial progress in that time under Mr. Chapman's leadership. Its volume of tonnage has considerably expanded; and the foremost growers of the locality are numbered among its members and shippers. Results of the season's sales were examined; and gratification was expressed to the American Fruit Growers Inc. for its effective selling service, which service will be continued.

JAFFA ORANGE EXPORTS EXCEED THOSE OF 1926

Total shipments of oranges from Jaffa (Palestine) from the beginning of the season on November 13, 1926 up to February 28, 1927, amounted to 1,239,000 cases, according to Consul Oscar S. Heizer at Jerusalem.

Exports during the corresponding period last season totaled approximately 990,000 cases. The United Kingdom is the principal export market. The exporting season usually closes in April.

Adv.

BLUE GOOSE NEWS

OFFICIAL publication of the American Fruit Growers Inc., Growers Service Department, published the first of each month in the interest of the citrus growers of the state of Florida.

EDITORIAL ROOMS
502 Yowell-Drew Building
ORLANDO, FLORIDA



NOW MEXICO SPRINGS

ORANGE BLOOM EGGS

Perhaps there is some member of your family who does not like eggs. Try flavoring the eggs with orange blossoms, and you probably will have solved the problem. The story comes from Mexico of an American orange and poultry grower who has given his chickens a diet in which blossoms from his orange trees formed a part.

He states that the diet stimulated the production of more and better eggs, and eggs having a delicate orange blossom flavor and delightful odor.

This may be orange "publicity" but whatever its origin it's interesting and is plausible to anyone who has drunk milk the source of which had wandered into a wild carrot field or garlic bed.—The California Citigraph.

BETTER SCHEDULES TO REACH BOSTON MARKET

Appreciation of Florida's perishable business is clearly evidenced, and good news to Florida growers and shippers is contained in the following letter received from Mr. George Hannauer, president of the Boston & Maine Railroad, the delivering line for Florida perishables bound for New England's greatest market:

"We are glad to be able to inform you of new schedules under which the Boston and Maine Railroad will be able to give its customers 24

hours faster service on perishable shipments from the South. Effective with the beginning of the next Florida fruit season, October 1, we shall make delivery of Southern perishables at our new Fruit and Vegetable Auction Terminal on Rutherford Avenue early on the second morning after leaving Potomac Yards.

"This schedule, in which the Baltimore and Ohio, Philadelphia & Reading, Central Railroad of New Jersey and the New York Central Lines are cooperating with the Boston & Maine provides that cars leaving Potomac Yards at 7 A.M. TODAY will be in Boston, Via. Boston and Maine, at MIDNIGHT TOMORROW, unless icing is necessary, in which case arrival in Boston will be at 1:45 A.M. SECOND MORNING, insuring delivery at the Auction Terminal on Boston and Maine tracks in ample time for the market of that day.

"If there is any considerable business from the South desiring to use this schedule previous to October 1, the effective date will be advanced. It will be appreciated if you will notify your Florida and other southern connections of this new schedule

"With this improved arrangement from Potomac Yard, the "Minute Man Perishable Products Service" of the Boston and Maine will be available to give you assured delivery SECOND MORNING FROM POTOMAC YARD, THIRD NIGHT FROM CHICAGO, and FOURTH MORNING FROM ST. LOUIS, a combination of service on fruit and vegetables surpassing anything available over any other line to Boston.

"We are sure that it is to the advantage of receivers and shippers that all fruit and vegetables which are sold at auction shall sell at the same time and place. Our new Fruit and Vegetable Auction Terminal on Rutherford Avenue, work on which has begun, is being constructed with this in mind, and with a view to giving the trade the best possible facilities to work with. Full details of this brand-new terminal will be made public later.

"With appreciation of your patronage, I am"

(Signed) "Sincerely yours,
"George Hannauer"
"President."

"I asked a policeman, like you told me."

"Well?"

"He said I was on the wrong side of the street, so I left the car there and walked over."—Contributed.

Sauce For The Goose



There'll Be Another

Visitor: "Sorry I couldn't get to your wedding."

Film Star: "Never mind, I'll have another one soon."—Selected.

Poor Boy

Bashful Young Man: "I'm a gentleman of the old school."

Nifty Flapper (on the sofa beside him): "Well, I dismissed your class a long time ago."—Selected.

And Spaghetti!

"Johnnie, what are the chief products of Italy?"

"Wine, ruins, and immigrants."—Princeton Tiger.

Just Wait

The diner ordered, among other things, steak, iced tea and pie. The waiter returned shortly with pie and hot tea.

"Hey, waiter, I ordered iced tea!"

"Keep your shirt on, mister, it'll be iced by the time you get the steak!"—Harvard Lampoon.

Still Ahead

A man who was slightly deaf walked into a drug store and spent a considerable time pawing over the displays on the stationery counter. He finally selected a fancy writing tablet and asked the proprietor what the price was.

"Thirty-five cents, mister."

"Five cents?"

"No!" shouted the druggist, "I said thirty-five cents."

"Yeh, that's what I thought. Don't need to holler so," replied the customer, laying a nickel on the show case and heading for the door with the tablet under his arm. The druggist's jaw dropped and he sped to the door, but the deaf man was just rounding the corner.

"Well, go to thunder!" ruminated the storekeeper. "I made three cents on you, anyway."—Selected.



This picture well illustrates how Blue Goose dealer helps are appreciated by fruit stores; and the manner in which they are utilized to add to displays and attract the attention of consumers.

BIRDSEYE VIEW OF

THE FREEZE OF 1835

Continued from page 1

days; during this period the mercury sank seven degrees below zero (evidently at St. Augustine). The St. Johns River was frozen several rods from shore, and afforded the astonished inhabitants a spectacle as new as it was distressing. All kinds of fruit trees were killed, to the ground; many of them never started again, even from the roots.

"The wild orange groves suffered equally with the cultivated. The orange had become the staple of our commerce; several millions (fruit not boxes) were expected from the St. Johns and St. Augustine, during each of the previous two years. Numerous groves were just planted, and extensive nurseries could scarcely supply the demand for young trees. Some of the groves had, during the previous Autumn, brought to their owners,

one, two, and three thousand dollars; and the increasing demand for this fruit, opened in prospect, mines of wealth to the inhabitants,

"Then came a frost, a withering frost."

Some of the orange groves in East Florida were estimated at from five to ten thousand dollars. They were at once rendered nearly valueless. The Minorcan population at St. Augustine, had been accustomed to depend on the produce of their little groves of eight or ten trees, to purchase their coffee, sugar and other necessities from the stores, they were left without resource.

"The town of St. Augustine, that heretofore, appeared like a rustic village, their white houses peeping from among the clustered boughs and golden fruit of their favorite tree, beneath whose shade, the foreign invalid cooled his fevered limbs and imbibed health from the fragrant air, how is she fallen! Dry un-

sightly poles with ragged bark, stick up around her dwellings, and where the mocking bird once delighted to build her nest, and tune her lovely song, owls now hoot at night, and sterile winds whistle through the leafless branches. Never was a place more desolate.

"With the blessing of usual seasons for two or three years, we shall probably begin again to have some fruit. The young groves are rising from eight to ten feet high, and a few blossoms were this Spring discovered on a few trees; but it will require ten years to restore our groves to the state they were in before the frost destroyed them.

"Groves of wild orange are at this time, 1837, in full bearing south of Volusia on the St. Johns River, and at Mosquito on the coast of the Atlantic."

UNIFORMLY



THE BEST

Continuous Volume Effects Economies

In almost every market some local selling organization dominates the field. Years of upright conduct and acquaintance with the trade have made theirs a commanding position. In a surprising majority of instances it is sellers of this type who represent the Blue Goose line.

These selected, non-competitive perishables afford them profitable employment fifty-two weeks in the year. They thus can earn more than through seasonal effort; and further the Blue Goose line adds to their prestige through its effective advertising and established reputation.

This high type representation assures both enviable standing and volume of sales for the Blue Goose line. Also it makes for economy as contrasted with seasonal selling operations which often find it necessary to pay year-round salaries to men of lesser type to procure representation.

In the greater markets where this organization maintains large representation and salaried employees, the continuous volume of sales throughout the year materially reduces costs.

That is why AFG charges remain at a level with those of many lesser selling services, yet many activities in the cultivation of wider markets and more intensive demand can be carried forward for the benefit of the growers.

American Fruit Growers Inc.

Orlando, Florida

DEPENDABLE



QUALITY

IMPRESSIONS

By The Impressionist

Miller, W.F.

And now an automobile accident has taken W.F.(Billy) Miller from us. Considering his was an instance of personality plus, it is not remarkable that the floral offerings at his funeral in Tampa probably eclipsed those at any other similar event in Florida. Billy Miller took the Exchange Supply Company when it was but a bare idea and in three years built it into one of the biggest institutions in Florida. He did it with only \$24,000 in real money put up by the growers who backed the undertaking. While he was doing it he made a host of friends, even among those who fought him, and who fought the project, hardest. He is bound to be remembered. He will linger in our own thoughts longest not as head of the Exchange Supply Co., not as president of the Tampa Board of Trade, not as W.F.Miller prominent real estate and financial operator, but as Billy Miller, who tried to sing second tenor upon a one time hit-or-miss quartette on which we simultaneously endeavored to sing first bass. A good many hundreds of miles of travel we whiled away thus during several years; and no one got any more fun out of it than did Billy Miller. His was truly the Rotary spirit; and no more spontaneous Rotarian ever came within our view.

Some men make addresses, some make speeches, some just talk, and some play hob with the time allotted to them. It is given to few to be truly original and at the same time interesting; and still fewer of these need to be coaxed to perform. Consider, however, Mr. J.H.Sadler, of Oakland, one of our real pioneer citrus growers of the early days. "I can't make a speech, nor even a talk. I just get on my feet and slosh around," is his usual prefix on those rare occasions when he can be induced to perform. But such "sloshing." He generally obtains about three times the applause given the speaker-of-the-day, who apparently rather fancies himself in that capacity.

Not many persons know that the beautiful little city of Winter Park once was sold as acreage by one of our most prominent citrus operators

of to-day. Yet that happened, and it was S.O.Chase of Sanford, president of Chase & Company who made the sale. Mr. S.O.Chase was a young man at the time in the employ of General Sanford; and a chance meeting with a stranger also named Chase resulted in the latter and an associate purchasing through S. O. Chase the present site of Winter Park which they founded. Take a look at those big oaks in Winter Park to-day and it seems hardly possible, does it?

No, John Snively, we do not personally recall that sale of Winter Park; we had the facts from Mr. S.O.Chase.

General A.H.Blanding production manager of the Florida Citrus Exchange, has a remarkable reputation as a harmonizer although he has not recently performed in that direction. For a number of years before the World War which made him a general, he ran some big phosphate operations. An old sheriff once told us there was less trouble and fewer fracas about General Blanding's operations than elsewhere. His darkies averaged high on good behavior; and according to this authority this was all because of the General's abilities as a harmonizer. It seems it was his custom to keep a pick-handle close by at all times, and when a row broke out his impartial application of the pick-handle upon rowers, rowees and by-standers worked for a quick restoration of harmony; and materially lessened the work of officers of the law.

A field box of grapefruit is required to produce a case of canned grapefruit, No. 2s. This last season there were 450,000 cases of canned grapefruit turned out of Florida canning factories, therefore 450,000 boxes of grapefruit which otherwise might have been unused were turned into money for the growers. The Porto Rican grapefruit canning industry seemingly is on the wane, and Florida's is on the upturn. Next season's Florida output probably will run about 600,000 cases. The business of canning grapefruit, however, requires large capital and highly

specialized knowledge. Little fellows who run into it are likely to run out again shortly thereafter, their chief contribution having been toward demoralizing standards of the packed product, and prices therefor. It is our impression that ultimately canned grapefruit is going to mean a great deal to grapefruit growers. The packers are working steadily developing by-products which will greatly reduce wastage of skin, peel and seeds that at first were thrown away. The time is not yet in sight; but it is not too much to hope that before so very long the factories may be able and willing to pay a dollar per box for grapefruit.

It is one of the hazards of writing on current topics for publication that a swift turn of events at times may make statements appear ridiculous when they appear in print. In spite of which we hazard the statement that it has been a long dry spell. C.M.Slaughter of J. Schnarr & Co., scanning reports from his field representatives, tells us that in point of actual damage to citrus crops this probably is the worst drouth since that of 1914. A lot of others are in substantial agreement. These lines are written on the first day of June. Let's hope by the time they appear in print that Jupiter Pluvius shall have come to bat, and that this drouth shall be a thing of the past.

Major Winfield Scott McClelland of Eustis came to Florida forty-four years ago. Today he continues active in business at an age when most men in his situation would have quit. In banking, citrus growing and the nursery business he has long been an active Florida asset. Notwithstanding which he found time some years back to patent and manufacture on a large scale in New York state wire door mats, ornamental wire fencing etc., commuting back and forth, so to speak, for the purpose. What that business made for him was reinvested in Florida; and no native-born Floridian is any more loyal, nor more convinced of Florida's substantiality.

THE GROWERS' OWN PAGE

"More About Limes"

By James N. Foreman

The subject "limes the coming fruit of Florida" appearing in the April number of The Citrus Industry page 15, must have attracted some attention, as I have had more letters than I could answer.

Now, through the courtesy of the editor, I hope to answer many questions asked in these letters. First, I want to explain the article should have read "root system" where it says "root stock", as there is a difference. I appreciate the spirit in which the editor made this change in the original but it did spoil the meaning.

"Root System" is my own discovery whereby sap is controlled to make larger fruit and more of it. Sap can be controlled the same as electric current.

Now, for those who want to plant limes in the old manner, I would advise rough lemon stock for high thirsty ground and sour orange for

This department is devoted to the growers, for their use in giving expression to their views and a discussion of growers' problems. Any grower is welcome to make use of this department for the discussion of topics of interest. The only requirements are that the articles must be on some subject of general interest, must be reasonably short and must be free from personalities. The editor assumes no responsibility for views expressed, nor does publication imply endorsement of the conclusions presented.

damp or low ground. Limes also do well on lime stock of the Mexican variety. For variety I would say at present there is nothing better than Tahiti, however, I am now propagating a new one very much like Tahiti but the skin is tougher and will make a better shipper. This is also seedless.

I do not agree with the U. S. Agricultural bulletin and many other authorities advising the picking of limes green. Limes picked ripe will keep twice as long as when picked green. Why not pick your oranges or grapefruit green?

Culture is practically same as other citrus. Plant trees fifteen to twenty-two feet apart, I prefer twenty-

two feet apart.

Your first enemy is the orange dog which when disturbed will shoot out two yellow horns emitting a cologne like odor, then comes aphids, wither-tip, cottony cushion scale, whitefly, and all enemies attacking other citrus trees and fruits. For all these we might say—watch and spray.

Supply and demand will take care of market problems. However, I look for an increasing demand for many years to come.

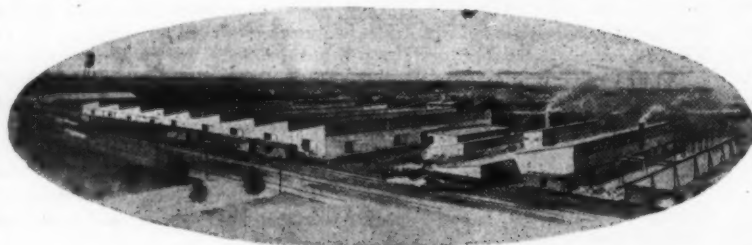
Urges Co-operation

Auburndale, Fla. May 26th 1927.
The Citrus Industry,
Tampa, Fla.

I am a reader of your most valuable articles published from time to time on the marketing problems of the citrus growers of this state. Through your columns, I would like to speak to my friends the citrus growers of Florida.

I have been for many years a citrus grower, was present at, and took

Continued on page 26



Plant—Located at Dunedin

BANKRUPT SALE

Offering for sale the entire plant (as illustrated) of the Skinner Machinery Company in bankruptcy, together with all machinery and fixtures, patents and assets.

This plant for years has controlled the citrus fruit packing machinery business east of the Mississippi—being the only manufacturer of this character of machinery east of the Mississippi.

Annual sales over the past five year period has averaged \$621,000.00 per year on fruit and vegetable machinery alone.

Present condition of the business due to operation in lines foreign to the business. With the Florida citrus industry now stabilized the operator of this plant is offered greater potential profits than ever before in the history of the business.

Full particulars available on application to

M. J. HULSEY TRUSTEE

SKINNER MACHINERY COMPANY

DUNEDIN, FLORIDA

Grapefruit Canning Offers Big Opportunities

By Russell Raymond Voorhees

The citrus industry has grown to such dimensions of late in this state that many who are closely connected with the industry do not see that apart from the growing of citrus fruits there are other branch industries that may be started and which will greatly aid the further development of the citrus industry itself. For instance, there is the canning industry that has already made considerable progress in the State of Florida and which gives every indication of making still further progress if it is given the proper sort of a chance. There are today a number of grapefruit canning factories in successful operation in the state and others are in contemplation. Reports from those which have been in operation this season indicate that in every case they were most successful. The only adverse words that have been received so far are that it was not always possible to get enough fruit, which certainly is a very healthy condition, to say the least.

One of the newer of the citrus canning factories that have been es-

tablished in Florida is the De Soto Canning Co. at Arcadia. Let's drop down there and have a little talk with J. M. Scoville, the manager, and see what he has to say relative to the future of the citrus industry and also the citrus canning industry.

"We started our grapefruit canning factory in Arcadia because we felt that there was an opportunity for such a canning factory in this section of the state. We were familiar with the canning procedure because we had been in it in other countries. The first problem that we had to face was one of obtaining the labor necessary. Naturally there was no available labor in this section that knew the canning business. But we did find that there was a plentiful supply of labor in Arcadia that was very grateful for the opportunity to obtain work and earn a living. We naturally had to train our own help but their eagerness and willingness made this a matter of only passing difficulty. It was practically no time before we had our force in shape to go right ahead and produce as fine

a canned article as it is possible to produce with any labor. When it is borne in mind that we developed a force of 140 to 150 workers in a very short time and from entirely green material, it can be seen that we had something to do nevertheless.

In going through the canning factory, however, it could be seen that everybody was happy and this spirit of contentment made the learning of the work easy.

"We do several things in this canning factory that are not always done. For instance, all of our grapefruit is hand peeled. We know that this method results in a far better product than when the other method is followed. The meat is taken out in sections with no dividing walls allowed to get into the can. Nothing but whole segments of meat are used. These are packed in a 45 degree syrup and processed. The canned grapefruit has practically the same taste as the fresh, especially when packed the way we pack it. Not only is the taste practically the same but it is a good buy from the consumer standpoint as well. In the No. 2 can there are about three grapefruit whereas in the No. 5 cans there are about nine grapefruits. From this it can be seen that the consumer gets full value and then some in compar-

Continued on page 26

Let Us Supply Your Printing Needs

For Grove, Packing House, Counting Room or Factory. Our equipment is complete, our service prompt and satisfactory and our prices reasonable.

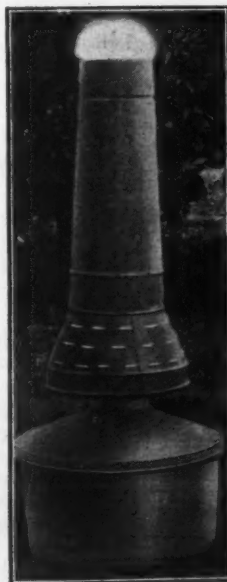
Bartow Printing Co.,

A. G. Mann, Mgr.

Bartow, Florida

Owned and operated by The Citrus Industry

Citrus and Truck Growers--Nurserymen! Buy Heaters Now At Special Spring Prices



Because of the necessity for securing raw materials to manufacture heaters, special prices are named for early orders. No heaters are manufactured except on order. Get in touch with our Florida agent at once. Secure this saving for yourself now. Deliveries made later.

"The Best Orchard Heaters Available"--- Says Grower

Tustin Ave., Orange, Calif.

Jan. 28, 1927.

I am using your Jumbo heaters in my citrus grove, 40 to the acre, and I am most thoroughly satisfied with the results.

They are, I believe, the best orchard heaters available — high in efficiency, and I have no difficulty in burning them practically without smoke.

Yours very truly
J.C. Hillebrecht.

SCHEU NATIONAL ORCHARD HEATER CO.

Covina, Calif.

Distributors of Orchard Heaters Manufactured by American Can Co., Toledo, Ohio

FLORIDA SALES AGENT

J. E. Palmer, Haines City, Florida

Florida Citrus Exchange Re-Elects Officers



E. L. Wirt, President
Florida Citrus Exchange

E. L. Wirt, of Bartow, was reelected president of the Florida Citrus Exchange, and C. C. Commander, of Tampa, was reelected general manager at the annual meeting of the board of directors held in the offices of the exchange at Tampa, June 7. Mr. Wirt also was continued as chairman of the board.

Other officers elected were: F. C. W. Kramer, Jr., of Leesburg, first vice-president; John A. Snively, of Winter Haven, second vice-president; H. C. Hilden, of Winter Haven, third vice-president; C. H. Walker, of Bartow, fourth vice-president; George A. Scott, of Tampa, production manager; John Moscrip, of Tampa, advertising manager; E. D. Dow, of Tam-

pa, traffic manager; O. M. Felix, of Tampa, secretary; William T. Covode, of Tampa, cashier.

The new executive committee is composed of F. C. W. Kramer, Jr. group 1; H. H. Kellerman, group 2; J. Varn, group 3; B. F. Stewart, group 4; W. W. Yothers, group 5; John A. Snively, group 6; H. E. Cornell, group 7.

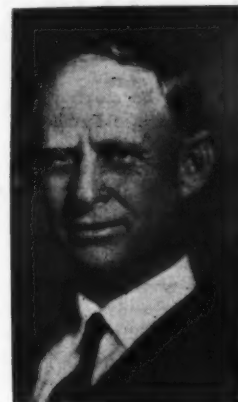
Two Directors Elected

Two new directors were elected, J. C. Merrill, of Marion, and C. H. Walker, of Seenic. The following individual growers were elected associate or special directors: F. S. Ruth, of Lake Wales; D. Collins Gillett, of Tampa; W. E. Lee, of Tampa; W. W. Raymond, of Owanita; M. G. Campbell, of Tampa; W. J. Howey, of Howey-in-the-Hills.

Others composing the board and representing sub-exchanges are: W. O. Talbott, of Lake; L. M. Hammel, of Hardee; B. F. Stewart, of Charlotte; A. J. Dozier, of DeSoto; F. C. W. Kramer, Jr., of Highlands; W. J. Ellsworth, of Hillsborough; H. H. Kellerman, of Indian River; J. Varn, of Manatee; H. C. Tilden, of Seminole; W. W. Yothers, of Lake Apopka; F. A. Rundel, of Orange; John S. Snively, of Florence Villa; R. O. Philpot, of Lake Regis; J. Burns, Jr., of Ridge; H. E. Cornell, of Winter Haven; V. L. Brown, of Polk; R. J. Kepler, Jr., of St. Johns River.

Limit Contingency Fund

The present contingency fund gained by one cent per box retain on all shipments was limited to \$300,000 in cash or liquid assets as a-



C. C. Commander, Gen. Mgr.
Florida Citrus Exchange

gainst \$750,000 which has been the figure heretofore.

The contingency fund is used as a form of insurance in emergencies and, according to Mr. Commander, it was not necessary to have more than \$300,000 for this purpose and anything beyond this figure will be returned to the growers in some manner on a revolving fund basis.

The board appointed a committee to go into the details of a dehydration proposition submitted by H. H. Ward, president of the Liquid Dehydration Company, of Chicago. The company it was said, has had great success in dehydration of milk, molasses and other liquids of this nature and proposes to operate in the same capacity on Florida oranges.

GOVERNMENT REGULATIONS ISSUED COVERING PRODUCE AGENCY ACT

Continued from page 11
behalf of another who without good and sufficient cause therefor shall destroy, or abandon, discard as refuse, or dump any produce directly or indirectly or through collusion with any person, shall be considered to have violated the act.

Section 2. Any person receiving produce in interstate commerce or in the District of Columbia for or on behalf of another shall be considered to have violated the act if knowingly and with intent to defraud he makes any false report or statement to the person from whom such pro-

duce was received concerning the handling, condition, quality, quantity, sale or disposition thereof.

Section 3. Any person receiving produce in interstate commerce or in the District of Columbia for or on behalf of another shall be considered to have violated the act if knowingly and with intent to defraud he fails truly and correctly to account to the person from whom such produce was received for the actual price received for that specific produce; and the actual expenses incurred and charges made incident to the handling and disposition of the same, unless a different basis of settlement is agreed upon between them.

Regulation 4. Certificates of Inspection

Section 1. The following classes of persons are hereby designated to make investigations regarding the quality and condition of produce received in interstate commerce or in the District of Columbia, and to issue certificates as to the quality and condition of such produce which is to be destroyed, abandoned, discarded as refuse, or dumped, upon application of any person shipping, receiving or financially interested in such produce:

(1) Any authorized inspector of the United States Department of Agriculture under the Farm Products

Continued on page 26

Don't Gamble

Buy INSECTICIDES of Known Quality
that carry Specific Guarantee of active
Ingredients--and Get Results

IT
STICKS
WITHOUT
A
STICKER



IT
SPREADS
WITHOUT
A
SPREADER

The Ideal Oil Emulsion Spray for Citrus Trees. It gives perfect control of all Scale Insects and White Flies. It flows easily, is convenient to handle. It is very stable, mixes with any hard water, with Lime Sulphur and with Bordeaux Mixture. It cleans the trees and fruit quickly of smut and dirt. It has a high killing index for Scale Insects and White Flies, exceeding all others in comparative test.

Watch your groves during June for Rust Mites. Spray with Ideal Lime Sulphur Solution or dust with Perfection Brand Dusting Sulphur.

MAKE USE OF OUR SERVICE DEPARTMENT

B. F. FLOYD: Horticulturist

JULIAN J. CULVER: Entomologist

DR. MORTIMER D. LEONARD: Entomologist and Pathologist

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JACKSONVILLE, FLORIDA

GRAPEFRUIT CANNING OFFERS BIG OPPORTUNITIES

Continued from page 23

ison with the prices of fresh grapefruit. In addition, she is saved the bother of preparation.

"I can give you some indication of how this canned grapefruit sells by the statement of this fact. We turned out 10,000 cans a day and were way oversold. We stopped all selling some time ago because we couldn't get enough grapefruit to supply the demand. Shipments to England and other parts of Europe are going out almost every week which gives a further indication of the extent of this new business.

"One advantage of the citrus canning of the state is the fact that russet fruit can be used for canning. Since the meat itself is just as good as the meat in any fruit and since we peel the grapefruit it makes no difference whether we use brights or russet fruit. On the other hand, it does make a big difference to the industry and the growers because by using these culls, and that is what they amount to, we are able to use up a part of the crop that has very little if any market value and by our operations turn such culls into value. I might say that we use very little choice fruit but I will match our canned grapefruit with any fresh fruit anywhere for quality.

"Judging from my long experience in the citrus industry and from the experience that we have had since starting this canning factory in Arcadia I am frank to say that the canning of citrus fruits offers one of the big opportunities in Florida today. There are still many localities where a canning factory could well be located and where the successful operation of it would be a comparatively easy matter. The citrus industry is one of the state's leading sources of wealth. Let's take full advantage of this opportunity and develop the canning end of it until we can truthfully say that we have really developed this wonderful industry."

This is the experience and the advice of one who knows whereof he speaks. The wise location of citrus canning factories will mean the further stabilization of the citrus industry in the state. Not only that, but they will mean that there will be opened a use for fruit that that today is a drug on the market in many sections of the land.

THE GROWERS' OWN PAGE

Continued from page 22

part in the organization of the Florida Exchange in Tampa, and have

THE CITRUS INDUSTRY

been a loyal member ever since. I believe in its principles with all my heart and wish I could show my fellow growers that we have the remedy in our hands whereby to make a grand success in the citrus business by uniting with loyal hearts in the Citrus Exchange and all pull and push to make it succeed.

Mr. C. C. Commander, its present manager, I have known personally for many years as a good business man and have had dealings with him into thousands of dollars and all very satisfactory. He is an honorable gentleman and can handle the Citrus Exchange business in a satisfactory way. If we put the whole business into the hands of the Florida Citrus Exchange, he and our splendid board of directors with the full co-operation of all growers of citrus fruits in the state, can and will give satisfactory returns for every box of good fruit grown.

As the fruit increases the market will expand and all the fruit will be disposed of at good prices every year.

Now, I want to ask all the growers of citrus fruits to lay aside all your fault finding, work together for success and we will have it, UNITED WE STAND, DIVIDED WE FALL.

Now we have an organization, inaugurated by the GROWERS and run by the GROWERS—for the benefit of the GROWERS and each grower shares in all of its business and receives full return of every cent his fruit brings. He has access to the company's books at any time. The grower receives full report of all details in connection with his individual account for the crop of fruit, every box being accounted for.

Now my fellow citrus growers come into the nearest Citrus Exchange packing house and co-operate for distribution.

Very truly yours,
W.E. Edmiston
Auburndale, Fla.

GOVERNMENT REGULATIONS ISSUED COVERING PRODUCE AGENCY ACT

Continued from page 24

Inspection Law;

(2) Any health officer or food inspector of any State, county, parish, city or municipality.

Section 2. Any certificate under the act must identify the particular lot of produce inspected, give the date upon which the inspection was made, the approximate quantity of the produce, the name and address of the agent handling the same, the fee, if any, charged therefor, and shall state the quality and condition

of such produce and that it was without commercial value at the time of the inspection.

Section 3. Application for an inspection under the act must be made or confirmed in writing to the person requested to make such inspection. The application must show the name and address of the shipper, the name and address of the applicant, the location and description of the produce, with marks, brands, or other specific identification if practicable.

Section 4. Any person issuing a certificate under these rules and regulations must mail a copy of the certificate promptly to the Chief of Bureau (See Regulation 1, Sec. 2, Paragraph 4.)

Regulation 5. Filing of Complaints

Section 1. Any person having reason to believe that the act has been violated should submit all available facts with respect thereto to the Chief of Bureau for investigation and appropriate action.

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Jaffa Orange

Why Not the Jaffa Orange?

An Interview with F. M. O'Bryne, formerly nursery inspector for the Florida State Plant Board, secured by Russell Raymond Voorhees

There is a lot of talk about this kind of orange and what kind of orange as being especially adapted to the soil and climate of Florida and without much doubt much that is said for the different varieties is true. But it seems that the Jaffa Orange is a sort of neglected sister among the orange varieties. No one has much to say about this orange and no one seems to know much about it. That it is a variety that is well adapted to Florida soil and climate is evidenced by the fact that F. M. O'Bryne, formerly for ten years nursery inspector for the Florida State Plant Board, is a strong advocate of this variety. Let's have Mr. O'Bryne tell what he thinks of this "little lost and neglected sister" of the orange family.

"The thought has often struck me, why is it that so few if any people come out in the open and have a kind word of praise to say for the Jaffa Orange," asks Mr. O'Bryne. "I have been in the citrus industry for many, many years and it seems to me that there are few other varieties that offer as much as this little lost and neglected sister. In the first place it is almost seedless. In the second place it is very juicy. In the third place it colors very well. In the fourth place it bears more prolifically. In the fifth place it is a very vigorous grower and in the seventh place it is slightly earlier than the pineapple orange which has a very large following. The Jaffa Orange which was imported into Florida by the late Gen. Sanford from Palestine in 1883 and therefore named the Jaffa Orange, has a very characteristic type of growth. The leaves bunch at the tips of the branches and for this reason it can very easily be told from other varieties. Wither tip, a disease which growers must always be on the lookout for, is not so easily contracted by this Jaffa orange. Growers know that other early varieties when planted on high sandy hills tend to die back.

"The Jaffa Orange has a finer flavor when planted on rough lemon stock and it performs very well in high pine land. It does not require as much fertilization as the pineapple orange and in every way it is as hardy if not more so. The ability to withstand cold is just as great in the Jaffa Orange as in any other variety, including the pineapple.

"In appearance it is so similar to the pineapple orange, except that it is better looking, that the market

will accept them as pineapples so that growers and shippers will have no trouble in disposing of them. One very important advantage of this Jaffa Orange is that it will hold on the tree for a very long time without injury to the quality of the fruit. This is quite important to the grower and shipper.

"I realize that few growers will plant nothing but one kind of citrus fruits. I realize that they will want early varieties, mid-seasons and late fruits. But such being the case I cannot see why more growers have not planted this Jaffa Orange for their mid-season variety. Realizing that there are many excellent qualities of mid-season oranges I cannot help but feel that after all is said and done the Jaffa is THE mid-season orange. Many growers have neglected the mid-season orange. It is a money maker if handled right. The Jaffa of all varieties, I believe to be the best bet for this crop. Why is it that more growers do not pay more heed to this neglected sister of the orange family."

Mr. O'Bryne is thoroughly familiar with the Florida citrus industry and knows whereof he speaks. He has groves of his own with this Jaffa Orange very largely represented and the things that he has said relative to this variety have been said from his wealth of actual experience with this orange. Without a doubt here is a variety that could be further developed.

CALIFORNIA ORANGE CROP ESTIMATE IS INCREASED

The California orange crop is estimated at 28,500,000 boxes by the United States Crop Reporting Board. This estimate has been increased from an estimate of 24,000,000 boxes in December, as a result of unusually favorable growing conditions and absence of injury from freezing.

The Crop Board's estimate includes all oranges picked during the current crop year, beginning the first of last November and extending until the last of next October. The California orange crop totaled 24,200,000 boxes last year, and 18,100,000 boxes two years ago.

A Sentence

Teacher: "What is the meaning of the word 'matrimony,' Robert?"

Robert: "Father says it isn't a word; it's a sentence."—Selected.

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And spray with VOLCK, the proven spray for insect pests.

It kills scale, mealy bug, white fly, and red spider, cleans the trees of sooty mold, and helps control rust mite.

Has extremely wide margin of safety and can be applied any time of year without the old-time oil hazard to fruit and foliage. Does not wash off in the summer rains.

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Federal Marketing Office to be Established on the Pacific Coast

Regional offices to serve as contact stations between the Bureau of Agricultural Economics, U. S. Department of Agriculture, and public and private marketing and research agencies in the Pacific Coast region, are to be opened, one in San Francisco, for the Southwest, July 1, and later another for the Pacific Northwest.

Burke H. Critchfield will be in charge of the California and Southwest office, and William A. Schoenfeld will be in charge of the office in the Pacific Northwest. Lloyd S. Tenney, chief of the bureau, announcing the establishment of the regional offices, declared that the national importance of marketing and research problems in agriculture on the Pacific Coast and in the Inter-mountain States makes it desirable to establish closer contact with the bureau than is possible now by reason of the distance of the regions from Washington.

The San Francisco office will serve the territory covering California, Nevada, Utah and Arizona. Mr. Critchfield has been connected with the Bureau of Agricultural Economics several years, and has been identified particularly with the new type of regional economic survey begun in 1923. He has directed such surveys in Pennsylvania, Indiana, Ohio, the New Orleans trade area, Mississippi, and Louisiana, Idaho, and Montana. His latest work has been an economic study of the demand, marketing and production of northwestern prunes which was made at the request of producers, cooperative associations and private distributors in that region. He will give particular attention to developing contacts between the bureau's work and the various marketing organizations on the Pacific Coast, will inaugurate marketing research and assist in relating the bureau's domestic and foreign demand information to the problems of distribution and marketing.

William A. Schoenfeld, who has been designated for the northwestern region, was formerly Assistant Chief of the Bureau of Agricultural Economics in charge of research, and also Chairman of the Crop Reporting Board. He spent two years, 1924-26, in Europe as Agricultural Commissioner, making studies of European markets for American farm products. His experience abroad has

made him familiar with the export markets of many of the products of the Northwest such as apples, prunes, dairy products, and grain. He is thoroughly familiar with the farm problems of the West, having formerly lived and worked in the Mountain States. He is just completing an economic survey of the milk market situation in the New England States. In the Northwest he will establish close relations with marketing organizations and research agencies in the area comprising Oregon, Washington, Idaho and western Montana.

WATSON ADVISES PROMPT CONTROL OF RUST MITES

The dry weather of the past few weeks has brought on a heavy infestation of rust mites throughout the citrus belt, says J. R. Watson, entomologist of the Florida Experiment Station. This is rather earlier than usual for a heavy infestation of rust mites and many growers have been caught napping. Citrus growers should look over their groves very carefully and frequently for rust mites and particularly grapefruit trees. When the mites are found in any considerable numbers the trees should be promptly sprayed or dusted. A grower should provide himself with a good pocket lens and familiarize himself with the appearance of rust mites and during dry periods, or for a few weeks following a dry period, should keep a close watch on his fruit.

Rusted fruit uniformly brings a lower price on the market than does bright fruit. It is smaller and consequently takes more to fill a box. Its keeping qualities are impaired. Fruit once rusted cannot be brightened again, so that control of rust mites calls for prevention rather than cure. This prevention consists in spraying the trees with one part of lime-sulphur to form 50 to 65 parts of water, or dusting with sulphur.

With the cutting out of our virgin timber, second growth is becoming more and more important and valuable.

"The forests of America, however slighted by man, must have been a great delight to God, for they were the best He ever planted."

—John Muir.

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June, 1927

THE CITRUS INDUSTRY

Twenty-nine

Preventive Measures Against Rots of Citrus Fruits Improves Keeping Quality

The keeping quality of Florida oranges and grapefruits may be considerably improved by certain preventive measures against three important rots occurring during marketing, according to the United States Department of Agriculture. The results of six season's tests are discussed in Department Circular 409-C, "The Effect of Spraying with Fungicides on the Keeping Quality of Florida Citrus Fruits," just issued.

Blue-mold rot develops after injuries have destroyed the naturally effective protective covering of the fruit and is prompt in showing up at ordinary temperatures. It can be reduced by stopping picking operations in periods of wet weather when fruit is tender, by careful handling to prevent injuries to the fruit, by keeping the fruit surface from remaining moist for any prolonged period, and by lowering the temperature during shipping and storage to retard the development of the rot, or by treating during packing with a protective antiseptic wash, such as a solution of borax.

The two other rots, different forms of stem-end rot, although more serious during marketing than in the grove, can be materially reduced by pruning out dead-wood to reduce the source of infection, by spraying, by removing the stem buttons immediately after picking (to prevent infection), by lowering the temperature during shipping, and by treating the fruit with a solution of borax during packing.

Spraying to reduce blemishes caused by melanose, another fungous disease, is also helpful in preventing infection from stem-end rot. The regular treatment for melanose control is one application, between April 15 and May 5, of a spray consisting of the 3-3-50 Bordeaux mixture plus 1 per cent of oil in the form of emulsion as described in Department Circular 259-C, "Commercial Control of Citrus Melanose." The net profits to the grower from spraying for melanose control may be conservatively estimated at 15 to 25 cents a box of oranges.

A copy of the bulletin may be obtained, as long as the supply lasts, by writing to the United States Department of Agriculture, Washington, D. C.

PUBLIC HEARING, JUNE 20, TO CONSIDER QUARANTINING TEXAS ON ACCOUNT OF CITRUS PEST

A public hearing to consider the advisability of quarantining the State of Texas on account of the Morelos orange worm, a dangerous pest, especially of oranges and grapefruit, which has recently become established in Hidalgo and Cameron Counties, will be held at 10 a.m., June 20, at Washington, D. C., before the Federal Horticultural Board, United States Department of Agriculture.

The department hopes it will be possible, as a result of eradication measures which will be enforced, to provide for the shipment of fruit from the infested areas under inspection and certification. The hearing will be held in accordance with the requirements of the Plant Quarantine Act to afford all interested persons an opportunity to be heard either in person or by attorney.

The Morelos orange worm, also known as the Mexican fruit fly, is probably a native of southern Mexico, where it has been known to exist for many years, attacking a variety of fruits, particularly grapefruit, oranges, mangoes, peaches, and guavas. As early as 1897, the department called the attention of American orchardists to the danger of introducing this serious pest. A Federal quarantine was promulgated in 1913, prohibiting the entry from Mexico of all of the known host fruits of this pest. Infested fruit has, however, frequently been found on sale in the markets in the Mexican towns opposite American ports of entry, and the fact that the pest has not become established on the American side at an earlier date has probably been due to the absence of fruit cultures which could become infested. Recent development of grapefruit orchards in the Lower Rio

Grande Valley, however, has furnished the necessary hosts. The presence of the pest in this valley is a menace not only to that region, but to the great fruit growing districts of this country as well.

NATURE'S OWN GROWING TIME IS HERE!

The summer months is one of the best times for the proper planting of flowers, shrubs, palms and shade trees. Their growth will be rapid from now until autumn, giving you well established plantings by the beginning of the winter season.

Let Nature Help You
in making your grounds beautiful and let our 44 years experience in Florida Horticulture be your guide in the proper selection of plants for your particular needs.
Write for our price list of Florida Plants, or better still—visit us at Oneco.

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JACKSONVILLE, FLORIDA

UTILIZATION

Continued from page 7

ways and means—and modern methods of utilizing sound, undergrade fruit.

In a study of citrus by-products, you will be startled perhaps, by the realization of the difference between the advanced ideas which come to us in the reflection of the activities on the Pacific coast, as against the almost total lack of activity on the part of the balance of the country.

Let us visualize, briefly, commodities, — even — other than citrus: pineapple, canned fruits, walnuts, prunes, raisins, olives, lima beans, salmon, tuna — practically every single article which is in a preserved state. Do you realize that on every one of these products, concerted action has been and is now being taken? On each of these articles, the brains behind the guns, have not trailed along, but on the contrary, are out at the head of the procession. All honor to—and most certainly may credit be given to California.

Gradings have been changed out there and are changing. To change is not a weakness—in California.

I am told that gradings of so basic a food product as lima beans in the dry state is constantly being improved. The gradings of walnuts were entirely changed and they have brought the industry to a point where they are branding every walnut, and almost inconceivable detail. Fruit gradings were changed a short time ago. Raisin gradings were all changed recently. One must keep in step with these changes or be left behind.

In California, internationally famous research work has been done and still is being done in an effort to make canned goods free from harmful bacteria, thus preventing heavy losses. Many important canning problems have been met and solved, not only problems of interest and value to the big commercial packers but the problems of the women in the home have received equal attention. New outlets are constantly being sought for the always increasing surplus as the acreage in the fruit industry in California has been rapidly growing larger, just as in Florida hundreds of thousand of idle acres must be made productive.

If other states and other colleges, if both small and large canning organizations have found it profitable to maintain canning and research departments, would it not also be profitable for Florida, already with her various trucking centers, her interesting tropical and sub-tropical

THE CITRUS INDUSTRY

fruits, to do the same? Has not Florida her own problems of equal importance with those of other states to be solved? One of Florida's greatest needs just now is canning and conservation establishments. The future for canned grapefruit, an industry that is only in its infancy, is already bright with promise, but old processes need to be perfected, new processes discovered for making marmalades, crushes and spreads, juices and concentrates for ice cream making and for household use.

In conclusion, may I say, that never was the importance of eating and utilizing citrus fruits so marked as now. But,—before we supply the New York and other markets with our fruit, let us remember that the best is none too good for the people within the State and first supply the home markets with the juiciest, sweetest and best flavored fruit that Florida can produce.

Thank you for the privilege, of having you listen to me.

EFFECT OF SPRAYING WITH FUNGICIDES ON THE KEEPING QUALITY OF FLOR- IDA CITRUS FRUITS

Continued from page 10

greater for the latter.

Similar excess in rot occurred during 1925 in the case of two tests of 2 applications of 80-20 lime-copper sulphate dust. In this case the Diploia rot was almost 75 per cent greater in the dusted fruit than in the untreated, the Phomopsis rot was about the same as in the untreated, and the resultant, including all rots, was about 10 per cent in excess of the total rot for the untreated fruit.

No explanation can now be offered for this peculiar effect of the lime-sulphur preparations and of the lime-copper sulphate dust in apparently favoring the development of the Diploia type of stem-end rot.

June, 1927

Prolongation of Keeping Period

From Figure 2 it is apparent that the oranges sprayed from April 15 to May 5 required about 2 days longer to develop 10 per cent of rot than did the unsprayed fruit, about 4 days longer to develop 20 per cent of rot, about 5½ days longer to develop 30 per cent of rot, and about 8 days longer to develop 40 per cent of rot. The unsprayed fruit showed these indicated percentages of rot in 15, 19, 22, and 25½ days, respectively, over the time elapsing before these several proportions of rot developed in the sprayed fruit.

Probably nine-tenths of the Florida citrus fruit reaches destination within 2 weeks from the time it is picked, the major portion of it between 1 and 2 weeks after picking. A period of 3 weeks from the tree ought to cover actual consumption of most of the fruit. The period of holding by jobbers, and consumers is, however, very variable, depending on a number of factors, and in some instances is quite prolonged. It is in such extreme cases that the protection given by the spraying is particularly valuable. Actual inspection reports show, in the course of a season, a considerable number of cases in which stem-end rot reaches 10 to 20 per cent or more at the time cars reach destination. Such fruit was probably exposed to considerable infection in the grove, or was subjected to unusually high temperatures or to considerable delay in handling, or to all of these conditions. Spraying in the grove to guard against the loss that might otherwise arise from first of these contingencies would insure the fruit against much of the other two.

General Discussion

The evidence presented shows that the same spray application that protects citrus fruits from melanose blemish prevents to a considerable de-

FEDERAL EMBARGO ON VALLEY FRUIT IS CERTAINTY UNLESS ALL ORCHARDS CLEANED AT ONCE

(Harlingen, Texas, Irrigation News)

An emergency such as this Valley has seldom faced exists now in the possibility of an embargo being placed on Valley fruit by federal government because of the infestation to our orchards with the Morelos fruit fly, declare government inspectors and large growers in the Valley. Today twelve government inspectors will invade the Valley and every orchard and every tree here will be inspected for the presence of the pest. All ripened fruit must be picked from the trees and either consumed or buried. All fallen fruit must be picked up from the ground and buried under one foot of soil. Unless this is done the federal horticultural board will place a quarantine on Valley fruit when it meets June 20.

gree their decay during marketing. This second benefit is obtained at no additional cost and is an added reason for spraying for melanose. The various forms of decay are controlled in varying degrees, and none of them is entirely eliminated; hence the necessity for continuing to observe carefully other precautions that have been found to be helpful in preventing decay. *Phomopsis* stem-end rot was reduced in greatest degree, *Diplodia* stem-end rot less completely, and *Penicillium* blue-mold rot scarcely at all. The indications are that potential stem-end rot infection by *Phomopsis* occurs mainly during a limited period which one spraying covers rather effectively, while that by *Diplodia* occurs over a much longer period is that a single application of spray results in comparatively slight control.

Notwithstanding the use of oil emulsion in the Bordeaux mixture for spraying citrus trees, care must be taken to follow some weeks later with a special application of oil emulsion for scale-insect control. (This would normally be made the last of June or first of July. If conditions warrant, an additional application should be made in the fall or during a mild period in winter. Proper measures should be taken to control rust mites if they appear. In other words, in planning for the control of one blemish or pest, all others that require control should be taken into consideration. Nothing is gained by controlling melanose and then allowing the fruit to become russeted from rust-mite attack or the trees and fruit to be damaged by scale insects or white flies.

This experimental grove of seedling orange and grapefruit trees, about the average of a large acreage in Florida, has improved steadily in freedom from pests and in general vigor and productiveness during the six seasons of spraying with Bordeaux-oil for melanose control. No special ill effects have been noted where as many as three applications a year were made. Die-back and fruit ammoniation symptoms have practically disappeared from this grove during the period. Oil emulsion has been combined with the Bordeaux mixture and also has been used alone once or twice a year.

The net profits to the grower from spraying for melanose control may be conservatively estimated at 15 to 25 cents a box of oranges, with the cost of additional oil-emulsion spraying counted in. The additional value in improved keeping quality is obtained at no increase in cost. It may not always be realized in direct

THE CITRUS INDUSTRY

returns, for the reason that a large bulk of Florida fruit is marketed and consumed within the rather long period before the appearance of the rots that spraying reduces. Such spraying is good insurance against the occasional occurrence of unusually severe outbreaks of stem-end rot that strongly depress sale prices or throw the burden of later rot loss on the unsuspecting buyer. The reputation of Florida fruit for keeping will be ultimately improved by a more general practice of spraying in groves that are heavily infested with melanose. Fruit from such groves, most-

Thirty-one

ly of the old seedling-tree type, is most likely to give trouble from decay, and the reputation of other fruit from cleaner groves may suffer undeservedly.

A prolongation of the keeping period of the fruit for a few days may mean the more successful supplying of the more distant markets, thus increasing the potential demand for the fruits. Proper spraying will tend to increase the effectiveness of other measures in bringing this about.

From the practical standpoint, when costs of spraying operations

Continued on page 34



*Made especially
for the needs of
Florida growers*

Insure Top Price Citrus Crops by Summer Fertilization

CITRUS fruits, today, are standard items in the American menu. And people have come to demand the highest quality.

Bradley's Fertilizers, applied in time to meet the summer season, strengthen the trees and encourage them to produce firm fruit with added juiciness.

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exact needs of Florida growers. In perfect mechanical condition, and so balanced in their plant-foods that they are readily available to the growing trees. Backed by sixty years of experience in manufacturing fertilizers. Years of practical tests on our own groves prove their ability to produce maximum yields of top-quality fruit.

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Jacksonville

Thirty-two

CALIFORNIA TAKES FEDERAL MAN TO HEAD MARKETS DIVISION

Wells A. Sherman, of the Bureau of Agricultural Economics, United States Department of Agriculture, has been selected to be Chief of the California Division of Markets on a cooperative agreement with the Federal Department. He took up his new work June 1, with headquarters at Sacramento.

The appointment of Mr. Sherman is for the purpose of correlating the marketing work of the California Department of Agriculture and the Federal Bureau of Agricultural Economics in developing a more effective service for California's agricultural industries.

The question of correlating the marketing work of the two departments has been under consideration the last two years. Governor C. C. Young of California recently renewed the request for such action with Secretary Jardine, and the employment of a man to represent jointly both agencies was decided upon following a conference of Governor Young, Director G. H. Hacke of the California Department of Agriculture, and Lloyd S. Tenny, Chief of the Bureau of Agricultural Economics, United States Department of Agriculture.

Mr. Sherman was selected for this work because of his extensive experience in the marketing field. He was one of the organizers of the Federal Bureau of Markets in 1913. He developed the first market news and shipping-point inspection service on fruits and vegetables and has been a pioneer in the organization of many other lines of marketing work.

It was decided that correlation of all the marketing activities of the two departments should be given a thorough trial with the hope that these agencies working in common may be able to do more to improve California marketing conditions than can be accomplished by carrying on the work more or less independently. California is regarded as a favorable place for the beginning of such work because of the stability and continued success of the State Department of Agriculture.

The U. S. Department of Agriculture is particularly interested in closer cooperation with the California Department because of the national importance of the problems arising in that State. Mr. Tenny agreed to lend to California one of his division leaders to conduct the work during the experimental period, and Mr. Sherman was selected for the posi-

THE CITRUS INDUSTRY

tion. F. G. Robb of the Federal Division of Marketing Fruits and Vegetables has been designated as Acting in Charge of that Division.

"The forest acreage in the United States is approximately 470,200,000 acres. With such generous forest resources, we have been prone to consider the supply of forest materials inexhaustible. The constantly increasing demands to meet our growing needs, however, and the destruction of forests by fire are arousing apprehension that in the comparatively near future industry may be handicapped for lack of forest products."—Calvin Coolidge.

The United States Department of Agriculture believes that wherever

cotton boll weevils were numerous last fall, emergence from hibernation this spring will be unusually heavy.

June, 1927

AVOCADOS

(Alligator Pears)

Nature's perfect food, are great profit producers. 1 tree has produced \$312 profit per year last 7 years. Country Gentleman tells of a tree that produced \$1,040 at one crop. Groves around Miami have paid from 100% to 200% or more for years. Small investors—largely northern men—have planted 30,000 trees, trees, largest Avocado grove in the world. Begins bearing next year. Needing more capital to bring grove to bearing, we offer chance for small investments that will bring large income for generations. Illus. book of FACTS tells the story truthfully. Endorsed by Bankers, Local and Gov't. Officials. It's FREE. Address AVOCADO PARK GROVES, E. F. Hanson, Gen. Mgr. (Mayor Belfast, Me. 10 yrs.) 105-C.I. Flagler Arcade, Miami, Florida.

THE FERTILIZER FOR RESULTS

The sole reason for the ever-increasing demand for "A&G" Brands of Fertilizers is the splendid results they give wherever they are used.

Genuine Peruvian Guano & Citrus Bone Base Fertilizers

AMMO-PO—THE PERFECT TOP DRESSER

Open Formula — No Filler Fertilizer

ATLANTIC & GULF FERTILIZER CO.

Jacksonville

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Sole Distributors of

Effective

Economical

Easy to use



Controls Insects

Renovates

Stimulates

THE BETTER OIL-SPRAY

Write for RENOL BOOKLET AND "FACTS ABOUT FERTILIZERS"

FRUIT TREATING PROCESS

WE OWN THE EXCLUSIVE RIGHTS FOR THE ENTIRE UNITED STATES in the process of treating citrus fruit with a mixture of paraffin and gasoline or similar volatile solvent covered by McDill United States Patent No. 1,630,129, granted May 24, 1927.

To packers desiring to treat their fruit by this process we are prepared to grant the necessary permission on suitable terms. Applications will be considered in order of receipt. Address all inquiries to

Brogden, Ricketts & Haworth Company

Box No. 338 Winter Haven, Florida

HOTEL HILLSBORO

Tampa, Fla.

TOP O' THE TOWN

European Plan, Fireproof 300 Rooms With Baths

THE CENTER OF TAMPA

Rejected Shipments Big Problem In Fruit and Vegetable Industry

About 81 per cent of the Washington State boxed apple shipments during the three-year period 1922-25 were sold f.o.b. usual terms, and 10 per cent of these cars were sold at a reduction from the original price following rejections by buyers in distant markets, the Bureau of Agricultural Economics, United States Department of Agriculture, has found in a survey of the situation. There were reductions in price on the rejected cars averaging 20 per cent of the invoice price.

The rejection of shipments purchased at point of origin by buyers in distant city markets is one of the outstanding problems of the fruit and vegetable industry, according to the bureau's marketing specialists. Phases of the problem which were given attention in the study include methods of sale of boxed apples, extent of rejections, amount of price reductions on account of rejections, disposition of cars rejected and resold by the shipper, reasons given by buyers for rejecting shipments or requesting allowances, relations of rejections to price changes, purchases on Government certificates, and confirmation of sales.

Reasons given by buyers rejecting shipments related mainly to condition of the fruit, including such factors as decay scald, over-ripeness, freezing injury, and internal breakdown. Condition factors were given as reasons for rejection in over 60 per cent of the cases as an average for the three-year period. Grade factors such as color, pack and sizing, bruising and blemishes were much less frequent reasons for rejections, averaging less than 15 per cent for the three-year period. Miscellaneous causes such as disputes concerning specification of sizes, and the like, were frequent reasons for rejections.

The department marketing specialists suggest that buyers and sellers make it a practice to secure written confirmation of sales on a standard form on transactions handled through a broker or agent; that complete specifications including a statement of sizes, condition of fruit, and other factors, be written into the sale contract; that in case of sales negotiated direct between buyer and seller all information essential to a valid contract be included in the letters or telegrams. Use of Government shipping-point inspection ser-

vice is also recommended as supplying a definite description of the shipment at point of origin.

A detailed report of the survey has been published as Department Circular 413-C, "Extent and Causes of Rejections of Boxed Apples from the State of Washington—Seasons 1922 to 1925," copies of which may be obtained from the Department of Agriculture, Washington, D. C.

AMERICAN CYANAMID SALES CO. MOVES ORLANDO OFFICE

The American Cyanamid Sales Co., Inc., Florida distributors of Cyanogas, and grove-fumigation experts have moved their Florida office and warehouse in Orlando to 1235 North Orange Ave.

Here they now occupy exclusively the large concrete office and warehouse building originally erected for and occupied by the Fletcher-Crawford Co., building materials. The location has a magnificent view out across Lake Ivanhoe, and is north of the railroad tracks on the northern extension of Orange Ave. formerly known as the Winter Park road.

Here the organization has ample storage for its stocks and tents, coupled with ample office facilities, and a most convenient and advantageous location alongside this much traveled thoroughfare.

In the long run, work with the juniors is more profitable and brings larger results than work with adults. It is difficult to change the ideas and methods of men and women who are past middle life; it is much easier to start the boys and girls with good ideas than to correct wrong ideas after they have once been formed. The great need in American agriculture is to encourage the right kind of boys and girls to remain on the farm. The serious problem is not the number of boys and girls that go to the city, but the kind of boys and girls that remain on the farm.—Dean Alfred Vivian, Ohio State University.

A teaspoonful of honey spread over the halves of a sliced grapefruit and allowed to stand all night will penetrate the cells of the fruit, and the next morning it will have the ripeness of flavor that one may otherwise get only by picking the ripe fruit from the trees in Florida.

Place YOUR Orders Early

We want to disappoint no one, but the volume of orders already placed with us for delivery makes it advisable to place orders as promptly as you can. We intend to maintain quality regardless of our output, and early sales far exceed our best expectations.

NEW Flexible Non-Bruise Picking Bag

The practical bag for practical people. Experienced packing house managers hail it as the biggest advance in the business in the last dozen years. Cannot bruise the fruit or the picker. Makes work, lighter, faster, and puts the fruit into the field box unbruised and in the best possible condition.

Does all this and yet is the most inexpensive picking bag on the market — gives most wear per dollar.

ASK FOR SAMPLE: If you are a buyer or packing house manager and haven't yet seen this new invention, we will send sample on approval. Write on your letterhead, please.

Non-Bruise Picking Bag Company

519 East Amelia Avenue
Orlando, Florida
(Patent Pending)

EFFECT OF SPRAYING WITH FUNGICIDES ON THE KEEPING QUALITY OF FLOR- IDA CITRUS FRUITS

Continued from page 31

and benefit in control of melanose are considered, the best procedure is to use a single well-timed application of 3-3-50 Bordeaux-oil.

Summary

The results of six seasons' tests show that citrus fruit from old seedling trees in Florida can be materially improved in keeping quality by spraying once between April 15 and May 5 with 3-3-50 Bordeaux mixture plus 1 per cent of oil in the form of emulsion. This is the regular treatment for melanose control.

By this means half or more of the Phomopsis type of stem-end rot was prevented over a prolonged holding period. The reduction of Diplodia stem-end rot was about one-fifth. Blue-mold rot and several miscellaneous minor rots were not materially affected.

The combined effectiveness against all rots amounted to a reduction of about one-third.

Mrs. Noah Identified

"Oh, Papa, can you tell me if Noah had a wife?"

"Certainly; Joan of Arc. Don't ask silly questions."—London Tittles.

This is a Cereal

Dusky Swain: "Honey, that powder tastes good; what kind is it?"
Mulatto Maiden: "Three Flowers."
He: "What all kind's that?"
She: "Wheat, rye and barley."

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The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion. Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

REAL ESTATE

WILL EXCHANGE West Texas cattle ranch

THE CITRUS INDUSTRY

for unimproved or improved land in Florida. What have you? Give price and full particulars. T. E. Bartlett, 3410 McKinley Ave., El Paso, Texas.

"BOOK OF TRUTH"
For planters of new groves
Is yours for the asking.
Write Today.

OCKLAWAHA NURSERIES INC.

"Pedigreed Citrus Trees"
Lake Jem, Florida

FOR SALE CHEAP—Eleven acres high, rolly citrus land; 4 acres cleared with small house, and large nice bearing orange trees full of fruit. Nicely located near Altamonte Springs, Fla. For particulars write H. A. Lunquiere, 41 N. W. 29th St., Miami, Fla.

FIVE ACRES and a town lot, all for \$700.00. Biggest bargain in Florida. Certain money maker. We want reliable salesmen to present this meritorious proposition to investors. Sumter Gardens and Bushnell Park lots. Every purchaser highly pleased. Florida Garden Land Company, Box 1759, St. Petersburg, Florida.

WANT TO SELL HALF INTEREST IN FIFTEEN ACRE SATSUMA BEARING GROVE ON HIGHWAY NEAR PANAMA CITY. ROBT. LAMBERT, OWNER. FOUNTAIN, FLA.

SATSUMA BUDWOOD from Bearing Trees. Hills Fruit Farm, Panama City, Fla.

FOR SALE—Pineapple land in winterless Florida. \$15 an acre. Almont Ake, Venus, Fla.

WANTED—To hear from owner of land for sale. O. Hawley, Baldwin, Wis.

MISCELLANEOUS

\$1950.00 TO \$3500.00 income per acre from limes; want partner, exclusive lime culture. Jas. N. Foreman, 4026 2d Ave. S., St. Petersburg, Fla.

FROSTPROOF cabbage plants—500 \$1.00 postpaid. Expressed \$1.00 thousand. Wholesale Plant Co., Thomasville, Ga.

ADVERTISING RESEARCH WANTED: Specialist in foods and nutrition, drugs, disinfectants, and insect control. Successful record in copy work and syndicate writing. Desire assignments in fruit products. Can introduce new facts and put new punch into educational advertising. Mrs. Susa P. Moore, P. O. Box 523, Chicago.

CITRUS FRUIT TREES: All varieties at very attractive prices. No order too large or too small. Either mixed trees for home planting and replacements, or large orders for commercial plantings. Sizes $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{4}$, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 inch caliper. On sour orange and rough lemon root. Finest quality, clean, straight, well rooted from prolific bearing stock. Our quality and price will save you money. Let us know the variety, size and number of trees which you will require and our special quotations will be given. Florida Citrus Nurseries, P. O. Box 617, Tampa, Fla. Phone M-50612.

FOR SALE—Dairy and stable manure, car lots. Link & Bagley, Box 464, Tampa, Fla.

WHITE WYANDOTT Cockrels, regal strain—the best in the country, direct from Martin pens. Utility and show birds \$5.00 each; also eggs for hatching \$5.00 per 15. W. A. King, Gen. Del., St. Petersburg, Fla.

SOUTHDOWN SHEEP, White Rocks, Toulouse Geese, Guineas, Angora and Milk Goats, Circular free. Woodburn, Clifton, Va.

WANTED: Competent man to work ten acre farm near Ocala, Florida, profit sharing basis. Young tangerine grove, many fruit trees, rich soil. Big money in onions, poultry. Comfortable, furnished house, good barn. R. F. D. 41, Burbank, Fla.

FARM—GROVE—HOME
22 ACRE large bearing grove; modern two-story, 8 room house, completely furnished on third largest lake in state in thriving town; good roads, church, schools; complete line farm implements and tools. P. F. Cloonan, Yalaha, Lake County, Fla.

HIGH BLOOD PRESSURE easily, inexpen-

June, 1927

sively overcome, without drugs. Send address. Dr. J. B. Stokes, Mohawk, Fla.

FOR SALE—200 pure bred white Leghorn hens \$1.25 each, any quantity. Cockrels \$2 each. Fain's Hatchery, Edison, Ga.

PUREBRED PULLETS FOR SALE—White Leghorns and Anconas ready to ship. Barred Rocks and R. I. Reds shortly. Several hundred yearling White Leghorn hens now laying 70%. Write or wire for prices. C. A. Norman, Dr. 1440, Knoxville, Tenn.

LAREDO SOY BEANS, considered free from nematode, excellent for hay and soil improvement. Write the Baldwin County Seed Growers Association, Loxley, Alabama, for prices.

MILLION Porto Rico Potato Plants, \$2.50 1000. W. W. Williams, Quitman, Ga.

FARMER AGENTS: Make \$25.00 weekly selling Comet Sprayers. Profitable winter employment. You take orders. We deliver and collect. Commissions weekly. Established 35 years. Particulars free. Rusler Co., Box C-18, Johnstown, Ohio.

JERSILD'S Invincible Strain White Wyandottes, bred for eggs, meat and beauty since 1905; hatching eggs, baby chicks, brooders and young pullets. Catalog free. Peter Jersild, Foley, Ala.

EARLY BEARING Papershell Pecan trees budded or grafted and guaranteed. Great shortage this year. Write for catalog today. Bass Pecan Company, Lumberton, Miss.

We Collect Notes, Accounts, Claims anywhere in world. No charges unless collected. We have collected in every State in Union, Canada and foreign countries. 25 years experience. MAY'S COLLECTION AGENCY, 28 Tinker Building Orlando, Fla.

FOR SALE—All varieties bananas and citrus trees. D. A. Nigels, Palm Harbor, Fla.

STRAWBERRY PLANTS. Send \$2.50 for 500 Missionary or Klondyke. \$4.50 per 1,000. Ready now. John Lightfoot, East Chattanooga, Tenn. 10-12t

RUNNER peanuts—Spanish peanuts Early speckled - Osceola - White Chinese and Bunch Velvet Beans. All varieties peas and Soybeans. Large or small lots. H. M. Franklin, Tennille, Georgia.

BABY CHICKS: Sent C.O.D. Pay when they arrive. Leghorns \$16.00 per 100; Bars, Reds, Minorcas, Orpingtons, \$18.00; Mixed \$15.00. Postpaid. Florida Baby Chickery, Lakeland, Fla.

LOOK—APRIL PRICES—Norman's chicks South's oldest, largest plant. Flocks tested & accredited. Quality. Thousands daily. Ready now. Fully prepaid and guaranteed. Write or wire. Per 50 100 500 1000
B. & W. Leg., Anc. \$7 \$14 \$65 \$125
Orps, Rocks, Reds, 8 15 75 140
W. Orps, W. Wyand. 9 16 78 150
Assorted chicks 6 12 55 100
Sensible cat. with new helpful brooding ideas. Buckeye brooders, quick shipment. C. A. Norman, Knoxville, Tenn. (I.B.C.A.)

BANANA PLANTS—15,000 Stokley improved Cavendish banana plants. Strong stocky plants guaranteed true to name. Original plants from Stokley Nurseries. Price twenty cents each at plantation or fifteen cents each in lots of 1000 or more plants. Minimum order accepted 100 plants. Sherwood Banana Plantation, Wade H. Webb, manager, Winter Haven, Fla.

AVOCADOS - SEED — Grafted. Reliable bearers only. John B. Beach, West Palm Beach, Florida.

BABY CHICKS—Sent C.O.D. Pay when they arrive. Leghorns \$14.00 per 100; Bars, Reds, Minorcas, Orpingtons, \$16.00; Mixed \$13.00. Postpaid. Florida Baby Chickery, Lakeland, Fla.

Time for Citrus Planting

Summer rains make vigorous roots and abundant foliage. We have a complete stock of Parson Brown, Pineapple, Valencia and Lou Gin Gong oranges; Duncan, Walters and Marsh seedless grapefruit; Dancy tangerines and other varieties. Straight, thrifty, well rooted and free from frost. Budded from prolific bearing parent stock. Finest quality. Attractive price.

Florida Citrus Nurseries

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